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There are vegetables in
color emulsions, and
vegetables don't last forever

COLOR PRINT PERMANENCE:

Sooner or later, photography's color hues will fade. How long they will last is a matter of time, aided and abetted by some other factors—see below—but fade they will eventually—as will other color materials in time. Practically everybody accepts the fact. The question therefore is not whether color fades, but how soon and what, in any case, one can do to prolong color's survival potentials as long as possible.

Another side to the situation and growing out of it is the reluctance (it is charged by color photographers and laboratories) of galleries, museums, and others to consider adding photographic color images to their collections.

To probe the general attitude on the subject of color's survival, I interviewed some 20 individuals—curators, laboratory chiefs, manufacturers, photographers, and others.

One way of preserving and extending color's life of course is to take reasonable precautions in matters of display and storage of prints. Careful adherence to successful practices in this connection will go a long way, we are assured by color experts and others professionally concerned with the problem, in maintaining the life of color images. Here is a small sampling of counsel on the subject. More is included in the reports of the interviews that follow:

According to Eugene Ostroff, curator of photography at the Smithsonian Institution in Washington, print permanence has two enemies: poor or careless processing, and bad display methods of the finished color prints. He adds these further points: As a general statement, as far as archival considerations are concerned, color may be said to be impermanent. Color prints have the best chances for survival at low temperatures (toward 55 F) and low relative humidity (probably 50 to 55

20 Experts Testify on Where It's At Today

By JACOB DESCHIN

percent), but "it's always a compromise."

"If you want to make them last as long as possible," he says, "keep them in as dry a place as you possibly can. Control of relative humidity is of paramount importance because chemical reactions are slowed down in the absence of moisture—low temperature also retards chemical reaction. And certainly you don't want to put the prints in a room that has windows. Use tungsten illumination where possible and avoid ultraviolet light, and store color prints away from any light."

He mentioned these other precautions: In addition to 50-55 relative humidity, avoid cycling of temperatures, from low to high then low again; instead, keep the humidity at a continuously low level. In handling prints, wear cotton gloves to avoid contamination of the print emulsion; if frames are used make sure they are acid-free.

In view of these hazards, how practical is it for museums and other purchasers of color to own and display color prints? He replied: "I think the owner/purchaser has to make his own evaluation, make a philosophical determination. That's up to the individual, isn't it?"

Weston Naef, assistant curator of

prints and photographs at The Metropolitan Museum of Art in New York: "I would say more precaution should be taken with the display of prints than with processing them." What steps did he suggest should be taken in displaying color prints to insure the longest life? "The strongest light," he says, "should be no brighter than 20 footcandles, and they should be exposed to light for no longer than about 300 hours every five years and that the light reflected from the print should never be more than 20 footcandles. No color photograph should be on the wall permanently. No color photograph should be exhibited in daylight at any time for any length of time."

Harold Jones, former director of the LIGHT Gallery, was more casual. "I just tell people not to hang color prints in window light or underneath fluorescent light. I explain the nature of fading, that they have to keep track and they certainly will fade; Eastman Kodak will not tell us how long it will take for a color print to fade. Also, keep the ultraviolet away from the print."

Marjorie Neikrug, director of Neikrug Galleries, says she's "had dye transfers out for a few years in light and I have not found any fading at all. If a dye is not in direct sunlight and if you use incandescent light you're all right."

John Szarkowski encouraged by new color work

I questioned John Szarkowski, director of photography at The Museum of Modern Art, about how his department stands on acquiring and showing color photography there. In general, that depends on how good the pictures are, he said. He cited three examples relating to color at the museum. "Obviously, it's expensive" and it's been impermanent, by and large, and he thinks that most photographers



Peter Bunnell

agree that most of the more interesting work has already been done in black-and-white. But he thinks that now more interesting work in color is beginning to appear. "We have a Bill Eggleston show coming, a medium-young color photographer from Mississippi, and you begin to hear about new names in color, like I hope to show Steve Shore. I like to think that this new movement is not something we decided; instead, that photographers are really beginning to understand what color is all about, what it's for and how to use it."

I said to Szarkowski that the impression around town was that he doesn't like color, and that that is why he doesn't show it. "We've done several exhibitions in slide form and have had several slide evenings," he said. They mean prints, I said.

"Why, that's a prejudice too, you know," he said. "Why should it be prints?" They think in terms of prints as an art form, rather than slides, I said. "That really doesn't hold very much water," he retorted, "to say it's got to be a print to be art. In the old days Alfred Stieglitz considered even black-and-white lantern slides to be the highest form of the art, not necessarily in color. Even in black-and-white really the best way to show pictures was in the form of a lantern slide. You've got the longest possible scale and the greatest subtlety, and the greatest brilliance, etc."

On the question of color acceptability at the museum, can one say, I asked, that he has never stopped considering color if he found acceptable material?

"I think that our position has probably been pretty close to the position of most photographers today," he said. "If you go out and ask 100 competent photographers at random, which they're most interested in in terms of their own work, black-and-white or color, most of



Syl Labrot



Scott Hyde



Lucas Samaras



Peter Krause



Eugene Ostroff



Photograph (converted from color) by Jay Maisel

PRINT PERMANENCE *continued*
them, say 80 percent, would say black-and-white, don't you think? The reason most of the shows here are in black-and-white is because even now photographers work more in black-and-white for their personal output. Even photographers who work commercially probably do most of their work in color and their personal work in black-and-white—because they like it better. But that is getting to be less true, I think; photographers are beginning to do their personal work in color, this because they're learning how to use it. I mean not just technically, but in terms of whatever the potentials of color are."

At the Met, color for Naef just another medium

"I think museums have as their obligation to look carefully at whatever work serious artists produce, and if their work happens to be in color then museums must look carefully at what they produce without considering the medium they used. No serious artist is going to work in a medium if he expects his life's work to disappear in front of his very eyes, to vanish in 25 or 30 years without making some provision for the possibility that it will vanish. I think you have to look at each case on its own and appraise the attitude of each person toward the problem of fugitive color. You have to consider the fact that color is fugitive and that it's as fugitive in photography as it is in Japanese prints of the 19th century.

"If you want to quote me on the color aspect of photography, the thing you

could say is that color photographs are probably no more and no less fugitive than the color in Japanese prints and the color in 19th century French and American engravings and etchings, and that therefore the same precautions must be taken in color photographs as are taken in other fine print media."

Naef observed that "the vision of the photographer is what is important and that artists and photographers of great vision who are working in color will be collected by the Metropolitan Museum of Art as much as any other kind of photography. During the last three or four years we've seen artists of talent beginning to use color with sensitivity and concern for the quality of color as color. They are basically seeing the world as color. I think color is absolutely the most exciting aspect of photography today."

At Witkin's, color is minor interest

At the Witkin Gallery, the director Lee D. Witkin reports only a minor interest in color. Color is relatively new and most of the interest among his clients involves famous old photographers who did not work in color, he says. Another reason for apathy toward color at his gallery, he says, is "the instability of color, the feeling that the color prints will not last." But Witkin believes that the "basic reason that people do not buy color is that none of the big names are working in it. If I had Stieglitz and Steichen color prints they would be bought, regardless of anything else. I think that basically it has to do with where the chips interests are."

Actually, I thought, contemporary big names abound in color today—Ernst Haas, Eilote Porter, Jay Maisel, Douglas Faulkner, Pete Turner, and even newer people, but, Witkin said, "the mystique that creates a market hasn't happened as yet to the people who are working in color. One reason why color has not caught on among collectors is because the field is too young to boast of vintage material; also, that collectors are mostly interested in rarity. An attractive feature about the sale of color prints is that they are relatively inexpensive when compared with high-quality black-and-whites.

Although Lartigue and Brassai have had some color prints at the Witkin, "it's not very likely that either will blossom out as a top color photographer. There is some invisible wall that you pass through when you go from black-and-white to color and the same image which is provocative and moving in black-and-white suddenly loses all that in color. The only thing that color can lend is visual shock. Color has not been used in an emotional way, only in a reportive way. Lots of decorators have come in for color, but the hard-core collectors are not interested."

For Harold Jones the picture's the thing, even if done in chalk

Harold Jones, director of LIGHT Gallery at the time of these interviews, denies hearsay in some quarters that the galleries are shying away from color because the prints don't last long and too often are poor in visual quality. "I have fine work by Stephen Shore, whose color work I have been showing for three years, Neal Slavin, and Joel Meyrowitz whose color work I have been showing exclusively."

As to the fading tendencies of color prints, he said "I explain to people that they have to keep track or the color prints certainly will fade. Kodak can't tell us how long the prints will last before they start fading; they don't know. But it doesn't really matter; it's not an issue. All you have to do is keep that ultra-violet light away from the prints. Some museums, not all, are turned away from color, even dye transfer, which are supposed to last longer than Type C, but I'm not convinced of that. There is something to be said for the new Type C resin-coated paper, which extends the



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Weston Naef

PRINT PERMANENCE *continued*

hues, and Cibachrome that has made its entry into the field of home processing. But it doesn't matter; the picture's the thing; if the pictures are good I don't care if they're done in chalk."

Referring to the fact that even some black-and-white prints fade if not properly washed, Jones said, "I've had prints here by some well-known contemporary photographers and we've had to send them back because they were yellowing or running in spots. So the hazard is not confined to color alone."

"Dye transfer traditional step from painting"

Marjorie Neikrug, who started her New York gallery 3½ years ago as exclusively a color photography gallery (later turning to black-and-white as well) once sold paintings in the gallery. She had taken on color photography because of the growing interest in color and thought the move would be "a good transitional step from painting to dye transfer." Her first color shows consisted of work by Roman Vishniac and Douglas Faulkner. "Much of that was on Type C printed by K&L. Now I'm afraid to sell Type C because of its relative lack of permanence, but I'm not afraid to sell dye transfers. However, most of the color shows offered me are not very good either in content or as prints. I've had Eliot Porter, who does his own color, and am having him again in the fall, later a show by Bob Munroe, a commercial photographer. I am quite ready to try new names; what I want to emphasize in my gallery first is the important images in color. I find that the color offered me in slides is usually just snapshots. I warn my clients that custom-made C prints are excellent but that they fade. I have an idea that if people were to buy two dye transfers of a work that would be a partial solution to the problem of



Dorothea Kehaya

permanence in the case of important prints, one that the client can hang, the other to keep in a drawer, away from light of any kind to substitute for the other when it starts going."

More space for color at SohoPhoto

Carrying a thick portfolio of color photographs, a woman photographer from Toronto traipsed all over town in search of hospitable wall space in New York's galleries, and had been turned away at every one until she reached George Alpert's SohoPhoto gallery in the Greenwich Village area. It was a happy meeting for both. Alpert not only cleared a space for her to display her work but actually bought four of the \$200 prints for his private collection.

And no questions asked about permanence. Both took it for granted that eventually (for whatever duration that might mean and only time could tell for sure) the prints might fade to some extent.

The acquisition swelled the total number of color prints on the walls for that month to 70 percent, more than any of the other galleries in town. "That's because I think that we are the largest gallery in the city," director Alpert said, "and therefore we have the largest physical capacity to show greater quantities of pictures at any one time than the other galleries—5,000 square feet in all."

Why do people buy prints? For the personal satisfaction of ownership, or to make money? Both, Alpert believes, although the emphasis varies with individuals.



Marjorie Neikrug

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Nathan Lyons

PRINT PERMANENCE *continued*

People who buy limited editions, on the other hand, certainly think of investment, Alpert felt. "You also have people who buy prints for the pleasure they have in them. What it comes down to is that the photographer produces pictures for himself. When he begins to produce for the investor then the whole direction of his work has to change.

As to all this talk about permanence, Alpert takes it in stride. Enjoy it while it's around; there's more where that came from. The most permanent thing in this connection, he said, is the set of three black-and-white separation negatives from which the dye transfer color photograph is made. With these in hand, color could last forever simply by reprinting from time to time.

Not even Kodak can tell you for sure

Frank Oberkoetter, an Eastman Kodak executive, has put the matter bluntly: With respect to permanence in color prints "we're infinitely better than we were five years ago, for instance, but what does that mean? It's a lot better but it has got to fade eventually. We can't tell you that an Ektacolor print will last X-number of years; instead, we must say: given a certain light intensity, a certain kind of light, a certain temperature, a certain humidity condition, etc.—and it gets to be ridiculous . . . Current technology in color photography, I don't care whose process it is, is not so good that we can say with certainty: 'this is a forever thing.'"

This is as close as you can come to making a definite statement about the permanence of Kodak's negative and print material, he said; if one is really looking for something archival, one



Ken Lieberman

should make color separations in black-and-white and if sometime in the future there comes a need for another dye transfer print or another Ektacolor print, or any other kind of color print or transparency, a new color print can be produced from the set of separations.

Has the present color problem always been around? "The portrait people were very concerned initially," Oberkoetter says. "They would ask, 'well, how long will the prints last?' and the answer has been: the dye image is always subject to fading, depending on where it's kept, in what kind of light, and it's not unlike your good furniture; to protect it from daylight you pull the drapes when the sun comes around to where the prints are hung. But then the portrait studio operator goes on to say to the customer: You cannot expect this to last forever; we have your original separations on file and we can always make a new print, and charge a nominal fee relative to the original cost."

Is Cibachrome the answer?

Peter Krause, president of Ilford, Inc., in this country, which handles

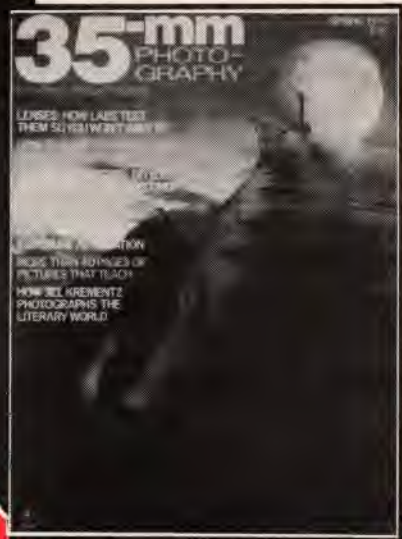


Stephen Shore

Cibachrome here, agrees there is no quick and fixed answer to the question of how to preserve color prints from fading, not even Cibachrome's. Much depends on the particular situation in which the prints are displayed. In certain cases, he says, Cibachrome may be 50 times more stable than dye transfer, in others maybe 10 times. "Under most situations," he says, "Cibachrome will be at least five to ten times as resistant to fading and under others it will be quite many more times. If you compare the cyan it is much more light stable; if you compare with magenta, it isn't. If you take a dye transfer and start comparison by ultraviolet, which is of course the point where you get into your greatest problem, you find that their magentas are pretty stable, their cyan dyes pretty unstable, and the yellows are kind of in between. If you expose to daylight without any intervening substances, like glass or anything else that absorbs radiation, just the print itself, then I would say our material is about five times more light stable. The print material we now have in effect is more stable than the material we had before. We have improved it so that the three dyes that are in the material are fading at about the same rate, so that the color

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The Weston Connection

35-mm photographers don't *have* to shoot everything at 1,600

By HAROLD O. MARTIN

In recent years, 35-mm photography has gotten very simple. Just load the camera with Tri-X or a similar high-speed film, expose at 2,400 (or 1,600, if you are conservative), push-process, and bingo, an available-light print of a beach scene, exposed at f/16 at 1/1,000 second.

Why?

During the course of repeated visits to the Edward Weston exhibit at the Museum of Modern Art, the sheer technical perfection of the prints started a nagging, somewhat quixotic idea: What if Edward Weston had tried using 35-mm? How close could he have come to those superlative 8x10 contact prints without giving up and going to a larger negative? More important, was there any way for a 35-mm photographer to approach the technical quality of a Weston print without giving up the smaller format?

To begin with, the question seemed completely illogical. First, Weston's whole approach to photography was slow, subtle, careful, analytical—in a word, classical. This approach is the complete antithesis of today's 35-mm practice with its brash, highly subjective, careless, highly emotional style, typified by the increasing use of motor drives to push 36 frames of Tri-X through an SLR in about eight seconds.

Second, in using 35-mm, the prevailing philosophy is that the picture justifies the means. This is fine when you have to shoot in a subway station at f/1.4 and 1/30, pushing your film as far as it will go. After all, technique is merely the means to an end.

Third, the usual answer is that if you want more print quality, move up to a

larger format. To me, that answer is only half valid. If you want superb print quality in an 11x14 or 16x20 print, the kind of overwhelming quality you see in a Weston or Adams print, then you have practically no choice.

But what if you are after quality in 8x10—the size of most of Weston's prints? This is the kind of quality Harry Champlin prescribed about 40 years ago in a noteworthy book on 35-mm technique called *Brilliance, Gradation, and Sharpness*.

Anyway, after a final look at Weston's prints at MOMA, the goal was set: to produce a print from a 35-mm negative that would be technically similar to a Weston. It is important to keep the word "technically" in mind. Weston, apart from being a superb technician, was a consummate artist. He made his prints because that is what he wanted to say and the way in which he wanted to say it. While it might be possible to produce a 35-mm enlargement that would be technically outstanding, about the only comparison with a Weston print as a picture would be that photographic materials were used in both cases.

In passing, it might be interesting to note that the Germans seemed to have had a similar idea and developed what could be called the classical approach to 35-mm technique. Arguing that just because a photographer used a Leica was no reason to come up with lousy prints—prints that were unsharp, lacked crispness, and, in general, seemed to be unnecessarily mushy. They agreed that when the 35-mm camera had to be used for adverse conditions, the expected loss in print quality could be considered

a payment for the ability to bring back a picture. But for normal photography—exposures between f/5.6 and f/16 at speeds of between 1/60 and 1/500 second—there was no need to sacrifice quality for portability.

The result was the development of a classical approach to 35-mm technique. Starting point was a beautiful day, with sunshine, clouds, plenty of light, and possibly some Nordic beauties. The camera was loaded with a rather slow (ASA 25 to ASA 50) film, with a thin, fine-grained emulsion. Exposure was a little on the thin side to keep density down and development was in a highly dilute compensating developer (epitomized by Agfa's 80-year old wunderkind, Rodinal) at about 1:100.

The results were technically fantastic. Enlargements up to 16x20 could stand comparison with similar size prints from larger negatives—if you didn't look too closely. (Hedging their bets, the Germans suggested viewing the prints from a distance about equal to the longest dimension of the print—thus viewing a 16x20 print from a distance of about 2 feet.)

The pictures ranged from appealing to boring, but the reactions may simply be the fault of the viewers. Actually, if you've ever had the chance to see original prints of pictures by Cartier-Bresson or Eisenstaedt, you will see outstanding technical quality plus the results of a fantastic eye at work. The point is that good pictures and good prints need not be mutually exclusive.

The question of quality

Photographic quality, particularly print

35-MM PHOTOGRAPHY



Brilliance and sharpness of Edward Weston's nude exemplifies his photographic approach. Without these qualities, his work would lose much of its impact. Surrealistic landscape with balloons utilizes grain deliberately for its textural quality, contributing to the overall esthetic effect of the photograph taken by Steven Kayfetz of San Francisco.





TRI-X: GOOD

This photograph of New York's Metropolitan Museum of Art was taken with a 35-mm camera on Tri-X rated at 800 and developed in Edwal FG-7 at 1:15 to maintain optimum sharpness. Inset is blow-up of building detail. Exposure was $f/11$ at $1/250$ second. By any standard, this would be an excellent print, albeit boring subject matter.



WESTON CONNECTION *continued*

quality, is a subtle thing, but for purposes of this discussion, we can again borrow Champlin's prescription—brilliance, gradation, and sharpness. However, we will reverse the order and take sharpness first.

During a period when I was selecting prints for display in a gallery, I found that very few photographers seemed to be able to make a sharp print, at least when viewed from normal reading distance. In some cases, the lack of sharpness was relatively minor—there was an emotional impact that did not require the ultimate sharpness. (Many of Stieglitz' finest prints are not particularly sharp, but they have an emotional content that makes sharpness almost irrelevant.)

But in more cases, there were pictures that depended for their success on sharpness and clarity and which made me feel the photographer should indeed have gone to a larger format. Invariably, these pictures were made on a high-speed film.

Where does the 35-mm photographer

lose sharpness?

First, in inaccurate focusing. As Bob Schwalberg was fond of pointing out years ago, the eye is a notoriously poor optical instrument when it comes to focusing a 35-mm single-lens reflex camera. Even the split-image rangefinder and correction lenses don't often help enough. Theoretically, depth of field should take care of most problems but when you enlarge, your depth of field begins to disappear and the bigger the print, the faster the disappearance.

The single-lens reflex demands really good vision, even if you don't have to wear glasses for distance. One experienced professional photographer in his late 40s found he couldn't get sharp pictures with his particular SLR. He didn't wear glasses and never had any problems with Leica rangefinder cameras or Hasselblad waist-level cameras. A check with his friendly tech rep uncovered the reason. The camera finder system was designed with a

built-in minus one correction, which would be the correction required for a slightly nearsighted user. The photographer was slightly farsighted, the almost inevitable result of aging. Once he got a suitable correction lens to change the viewing system to absolute zero, he found his 35-mm SLR was fantastic in terms of sharpness. He now enjoys life, photography, and sharp prints.

The next most-frequent cause of unsharpness is camera movement. While the ability to hold a camera rock steady varies, don't try it at less than $1/60$ second. Ansel Adams, whose prints from practically any size negative he chooses to work with are superb, once pointed out that he did not feel he could hold a 35-mm camera steady at less than $1/125$ second. This is a good basic shutter speed for normal (50-mm) lenses; with longer lenses (85-mm to 135-mm), use $1/250$ second.

Overexposure is yet another cause of unsharpness. The reason is a



PANATOMIC-X: MUCH BETTER

Same view of Metropolitan Museum was made on fine-grain Panatomic-X in same model of camera as shot on opposite page to eliminate as many mechanical and optical variables as possible. Film was rated at 64, developed in FG-7 at 1:15. Exposure was $f/5.6$ at $1/125$. There is sharpness and brilliance in this print that Tri-X version does not have. This is the type of picture and lighting conditions that does not require ultra-speed film, so why use it?



phenomenon called "irradiation," which might be compared to hitting a bowl of gelatin with a baseball, the film emulsion being the gelatin and the light being the baseball. Ideally, the baseball should just make an impression equal to its size. In practice, there is some spread because emulsion is a kind of soft, gelatin-like affair with silver particles suspended in it.

Continuing our rather sportsman-like analogy, exposure determines the force with which the baseball hits the gelatin, disrupting the surrounding area. The greater the exposure, the broader the area of disturbance and the less clearly defined the point of impact. This, in rather unscientific terms, is "irradiation."

In passing, it should be noted that slow films (thin-emulsion) have less irradiation because the gelatin is in a flatter dish and cannot penetrate as deeply. High-speed films (with thicker emulsions) have more irradiation because the dish is deeper and provides greater scope for disruption. This is why

slow films generally offer superior sharpness (resolution) compared to faster films.

Which brings us to the fourth cause of unsharpness on my list—the unnecessary use of fast film. The reason that almost everyone uses you-know-what is that the wizards of Rochester have come up with a film that is extremely fast, while exacting relatively little penalty in terms of graininess or lack of sharpness. In fact, unless you actually compare prints, you don't notice any loss of sharpness, and with the great majority of moving subjects, the ability to use a faster shutter speed or a smaller lens opening more than makes up for a loss in sharpness.

But why use this film when you are shooting something that is standing still, in fairly bright light, and where the subject matter is subtle rather than obvious, with impact depending upon detail rather than drama?

Development also plays a part in our

little morality play. With high-speed films, the basic goal is to obtain the greatest possible emulsion speed and reasonably fine grain. With thin-emulsion films, the idea is to take advantage of the inherently fine grain of the film and select a developer that gives you maximum sharpness.

For example, with D-76, you can use the developer full strength or, as a one-time developer, diluted 1:1 for increased sharpness. But for optimum sharpness, the developers to use are highly diluted; FG-7 at 1:15, HC-110 at 1:31, or Agfa Rodinal at 1:50 to 1:100, are typical examples. An alternative is to use developers specially prepared for thin-emulsion films, such as FR X-22 or Ethol TEC.

The reason for using dilute developers was explained some years ago by Gustav Eberhard as the *Eberhard Effect*. Briefly, this is the increase in densities that occurs at the boundaries of light and dark areas on the negative. The

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WHAT PHOTOGRAPHY CAN DO FOR YOU

By RALPH HATTERSLEY

Now is as good a time as any to discover what photography can do for you. If you are a beginner it is a matter of looking ahead a bit with some experienced help like mine. If you are advanced the problem is to put things together a little better to see how far you have come. In either case it is an interesting thing to do, so I'm sure you will enjoy it.

You have probably discovered that it is very easy to get hooked on photography. If not, you soon will. Some people feel rewarded to find themselves hooked, but others have serious qualms about it. Is it a good thing? Yes, I think it's a good thing. I have taught photography to about 4,000 people and have yet to see one who was not substantially benefitted by it, which is saying a lot for the medium. It has been a kind of hobby of mine to learn how many uses people will make of photography, and I discover more each day. Its personal usefulness seems to be nearly endless. This would explain why so many people regard it as a kind of gift from the gods.

If you are a beginner you will soon find yourself in unfamiliar territory, but don't let that worry you too much. Things will be explained simply and clearly, so that you will probably find that you have a taste for the unknown. Photography is a mysterious magical art, anyway. It is good to understand this from the beginning.

Though the things that photography can do for you actually overlap quite a bit, I'm going to tell you about them one at a time. This should make for easier reading and can help you form your personal perspective of the whole subject, photography. It can also help you decide what kind of an involvement you want with it.

An aid to memory

Everyone knows that photography helps us remember those whom we love. The fact that it has grown into a huge industry is based squarely on this truth. Remove this memory factor and



This picture was shot fast, without my thinking about it much. In three minutes this fantastic edifice was scattered all over the room, never to rise again. With Bob and Kathi now grown, this picture links them with their still-alive childhood. There is an old saying that the child is in the man (or woman). It is a truism in psychology. Equally true, the child is in the photograph, his sweetness and innocence preserved forever. But you have to shoot fast sometimes. Shoot first, think later.



Dirty, rotten parental trick (catch them in bed when they're not moving around so much)! But from age four or so they would rather you crawl under a wet rock somewhere. It's not dignified to be caught with your roles down. Cleve is no doubt thinking I'm criticizing him for not being up and around. Truth is, I'm wishing he'd go back to sleep so my shooting won't be interrupted. The problem with photographing older kids is that they don't trust you as far as they can throw you—with good enough reason, no doubt.

In making family pictures you don't always get the cooperation you would like, but it doesn't really matter. Later, you'll like the picture anyway; there's just no way of missing. If King Kong wants to do his thing, let him. Since I was still pulling this kind of stuff in my mid-thirties, I'm hardly in a position to criticize. Besides, as apes go, he's doing pretty good, but his name is actually Cleve Kong. Perhaps the Old Boy is merely acting out his deep concern with life, love, and the tariff on peanuts. Better than Sir Laurence Olivier, I'd say—and he's mine!





WHAT PHOTOGRAPHY CAN DO *cont.* photography would soon wither away. However, a divorce of photography from the memory problem is one of the things least likely to happen in the universe, so there is no point in worrying about it.

Taking family pictures to bolster future memories should be the easiest kind of photography there is. All you have to do is take lots of them. It doesn't matter a bit whether they are esthetically good, bad, or indifferent. They will still do their job in bringing back warm memories. A well-made picture will have no more value in this respect than a poorly made one.

Oddly, those who do best by their family memory files are often those who know the least about photography. These are the people with their inexpensive plastic cameras equipped with flashcubes. They know barely enough to get the film, or film cassette, into their camera properly, and the flashcubes seated so that they will fire. Beyond knowing how to depress the shutter release when the picture is

framed in the viewfinder, they know nothing else about what they're doing. But they do know what they want to remember, and that's what really counts. The technical or esthetic quality of their pictures just doesn't matter to them, nor is there any reason why it should.

People with more experience in photography often have trouble in making memory-file pictures, many of them soon giving it up as a bad job. They want to make "good" pictures and to look good while they are making them. Though wanting goodness is a virtue, the desire is easily taken over by the ego and used for ego purposes. And we can project our egos into photography, too, though the rank beginners have yet to reach this point.

So the advanced workers, believing that their egos are being displayed and tested, feel that they have to come off like hotshots, both in their way of shooting and in their finished prints. They can't take ordinary snapshots but feel impelled to produce "art," whatever that is. When you do that you seriously

impair the memory stimulation functions of your pictures; all you remember is what your own ego was experiencing, which is only a part of what was going on. Instead of being the thrill it should be, looking back through your pictures becomes an orgy of embarrassment for your ego.

And you know how families are about egos! Why, the family could even be defined as the social grouping in which egos are given the hardest possible time. Thus the person who has advanced far enough in photography to project his ego into it is really asking for a hard time when he brings out his camera. Small wonder that so many soon give up on family photography.

In itself, this projection of the ego is not a bad thing. Indeed, it is a spiritual opportunity, in that it can guide you toward seeing what your ego is up to. If you want to be an angel you have to bruise and batter your ego into line, with the help of photography, if you like. But it does make simple memory-file shooting very difficult. How can you make simple



For people who want to get into photography as a language this picture is a nice challenge, with the Rockefeller Center wire-world in the foreground, St. Patrick's Cathedral behind. The world, visualized in terms of an expanded mock-up of an atom, looks like barbed wire strangling St. Pat's. Should we say science strangles religion? That's one interpretation. Another is that the picture merely represents two superimposed world views: the religious and the scientific-industrial. It could also represent the confusion in our minds concerning the relationship between religion and science. We could even see the heavy darks in the picture as interrelating forces, powerful forces, indeed. See what you can do for further interpretations.

snapshots when your ego insists that you have to become the greatest photographer who ever lived?

So you can see certain advantages in being naive about photography: you can easily make memory pictures that are relatively undistorted by your own egotism. A monkey could do it too, but don't let the thought disturb you. It just happens that monkeys are greatly superior to people in some respects.

Many people lose their photographic innocence, then struggle for years to get it back, usually without success. There is even a so-called "school" of serious photographers devoted to this pursuit, and a few of them seem to have come close. It is a very rugged road, however, so let this be a warning to you. If you are enjoying yourself innocently snapshotting around—family, friends, interesting places—you might be wise to let well enough alone and not dig into photography too far. There is no reason why you shouldn't cling to your innocence in this particular area. Lord knows, you have to give it up just about

SUMMER 1975

First, this picture seems to be an involvement with time and space. Since architecture itself is, this isn't surprising. It is also very romantic—Fifth Avenue Gothic, you might say. In shooting it there was the problem of finding beauty in miles of lifeless stacks of steel and glass. If you don't look for beauty you probably won't find it, and the quality of your life will be lessened. If you look for it, however, you will find it all around you. With its dramatic blacks and whites I find this picture improbable. Finding the improbable helps keep interest alive.



These floppy dogs are mine, photographed on a New York subway. For some reason I became entranced with them, which suggests I was using my photography in an effort to tell myself something. All I usually think about feet is that they either hurt or they don't. If they don't hurt I never think about them at all; if they do I can think about nothing else. So, what's the secret message from the inner me? Perhaps, love your feet and they won't hurt you so much. Or fill your shoes with fresh marshmallows.

These hoses go way down in the ground and suck up water, but it looks like some kind of a setup for intravenous feeding. Or it could be the way veins and arteries work inside us. With all this symbolism going on, a straight print was too much to take, so I made a light print and bleached the edges to make a kind of pseudo-biological thingy. Since I really dig it, I've probably rung my own bell somehow. But if my insides actually look like that I can't see the reason for my joy. When you commune with your inner self, you can't always know what's going on.



A section of a charred plank, so abstract you can print it any way, from black to almost white. For people who like to meditate while printing, this is a great subject, because it inspires the imagination to roam widely. It can look like metal, paint, mud—or an aerial view of something. In this print it even has a sinister emotional quality, like a creature from another world.

Besides being a screwy picture, this little epic shows you some of the power you have as a photographer. I'm thinking of the man, who existed only on a badly printed, thoroughly marked and torn poster. Nonetheless, in the photograph he has taken on a stronger reality than anything else. In making subjects look either more or less real, we are wielding power. Though doing so is usually harmless, some people get hung up.

My wife's doll collection. Photographing it helped me see for the millionth time how much I love her and her ways.





WHAT PHOTOGRAPHY CAN DO *cont.*
everywhere else.

Perhaps your best defense is to stick strictly to the how-to-do-it side of the medium and to stay very carefully away from the why side. If you start asking why, you will soon learn that photography can be a very heavy game indeed. If that is your meat, hop to it, and be sure to help yourself to the gravy. But if you just want to snapshot around happily, play it dumb—good and dumb. One of the most important things I ever learned in life was when and how to play dumb, so I pass my secret on to you. Passing yourself off as a koala bear could even save your life some time, and I did you not.

You may feel you need a rationale to bolster you in your snapshotting innocence. There is a very good one available: The only kind of photograph that people entirely believe is the snapshot. With other kinds they are intuitively aware that they are looking at ego projections, not reality as the race has agreed to see it. And for the memory side of it: There is no better way to assemble a fantastic memory-file than to be a flat-out snapshotter. You will really

capture your family and friends, not just projections of yourself. Thus going back through your pictures will be an immensely gratifying experience.

Involvement in a creative process

In our constant efforts to improve or heal ourselves there is no better tool than a lively involvement with a creative art. The artistic history of mankind stands as a testimony to this. Artists and poets have long been considered those who have reached the farthest in self-evolution, in the search for human perfection. But we don't have to get grandiose about this: Even people who have merely dabbled have usually found their lives improved.

It is the innate nature of human beings to be creative, and this process should go on all the time, night and day. It doesn't even matter so much what we create as that we do in fact create it. Creation is our business, you might say, even if we don't know for sure *what* we are creating. It is life, it is movement, it is human nature and need.

In the business world there are many people who think they do us a favor by making individual creativity unnecessary,

and we in our naivete believe them. Thus we have number painting, screw-together sculpture, and a myriad things waiting only a touch of model cement. The general idea of do-it-for-them has proliferated and expanded in every conceivable way, so that many of the arts are pretty well spoiled for the public. But not photography. Though the spoilers have been at work since the beginning, they've never managed to get a big enough bite to do any real harm. So we have an unspoiled medium to work with; thank the Lord for that. Whatever little damage was done to it is rapidly being undone. The do-it-for-them philosophy is very much with us in things like automated cameras, but it is not likely to do any harm there. Indeed, it will mainly lead people further into personal creativity with the medium.

The protective shield for photography has always been the fact that people want to make their own pictures, not someone else's. It would be possible to market a little kit containing processing chemicals and exposed paper; develop the paper and you get an original print by a famous photographer. Certainly this



WHAT PHOTOGRAPHY CAN DO *cont.* has been thought of more than once, but I can't imagine the public really going for it. For better or for worse, people want to make their own pictures. And this guarantees that photography will not be turned into a sterile medium. The nibblers are all around us, but they are not going to make a real dent. If they were going to we would have seen some signs of it by now.

People even seem to have an innate contempt for photographs made by others. This is shown by the little success even our finest photographers have had in selling original pictures and portfolios. People just don't want them; they want their own pictures. However, their contempt extends to themselves and to the medium itself. The feeling is that photography is a kind of nothing thing for nobodies. Though people experienced in photography worry about this they shouldn't, for it is an important part of photography's self-protection system. The contempt goes away in time, and people find themselves using the medium freely and creatively, relatively unaffected by the conformist forces around them. They make their own pictures, not someone else's. The very ordinariness of photography helps make this possible.

So if you still find yourself happily

making pictures, bringing them home from the drug store or making your own prints, you are well ahead of the game in the question of what photography can do for you. You are functioning as people were intended to: creatively. You are bringing new things into existence, images, and reacting to them in a fruitful way. Though you may not feel like a great *artiste* in photography, this doesn't matter a bit, for the process of creation itself is the thing. You are working on the cake, and the frosting can come later.

Non-verbal talking to yourself

When we are children we are all experts at talking to ourselves, but eventually we are denied this lively inner communion. As our egos develop they muddy up the water so much that we can't trust what we hear when we are talking to ourselves, so more and more we tend to deny ourselves this inner reverie. But we all feel the loss deeply.

Few realize that there are kinds of inner dialog that can more or less sidestep the ego. For example, photography can be used this way and often is. However, we listen to pictures with our emotional systems, not our ears, sometimes trying to translate what we feel into words, sometimes not. Words or not, we know that there is real communication going on, because we

can *feel* it. As we gradually learn to trust our feelings this knowledge becomes a certainty. Women are usually best at this, because they haven't spent their lives denying the very existence of their emotions.

Psychologists have provided us with some useful concepts of the human self, which they describe as a multi-level thing. Except for the ego, which dominates consciousness, all the other levels are carefully hidden, though they are striving constantly to express themselves. As a way of continuing its domination over consciousness, the ego constantly blocks this expression, ordinarily doing a very thorough job of it. However, when we get involved in creative work there is just too much going on for the ego to keep track of, so that higher and lower levels of the hidden self can sneak their messages through, usually in the form of rather obscure symbols which we can feel better than we understand verbally. This obscurity is necessary for outwitting the ever-vigilant ego, which was at one time called "the wolf of consciousness."

Thus our photographs are always full of symbols designed to catch our attention. However obscure they may seem, at one level of the self we know exactly what they mean, or we wouldn't

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35-MM PHOTOGRAPHY



To me, the challenge here is to see this both as a tree and a monster (very much alive) at the same time. This is why I shot and printed it. It is also like a piece of modern sculpture, rather on the lower colonic side. So, I've given my excuses and no more are required. You don't have to excuse your photographs; just make them. They contain their own excuses for being. If other people don't see this it is their tough luck.

In exploring beauty, one should explore ugliness at the same time, for they can be two sides of the same coin. In this picture of a ruined gas pump we've got a lot of both, it seems to me. You could take it to a museum, and they would put it in their sculpture garden, but the tree and all the grass confuse things. A way of using this picture would be for giving people a hard time, especially other photographers. As a way of dissipating anger (mine) by stirring up theirs. All I would have to say is, "This is a very handsome picture; please tell me what you think of it." Actually, I do like it.



Sometimes the memory book works backward, and a picture taken today plunks itself down 20 or 30 years ago—as this one does for me. Taken recently, it could have been 40 years, when I was a kid. I grew up in this kind of world out in western Montana. I also like to think about the kind of person who would throw together a melange like this, for his country store is a kind of portrait of himself. Though I haven't met him yet (saving that for later), I already like him for his freewheeling way of handling his world.



About a year ago I spotted this farm with these huge ruined trees, but only when I photographed them not long ago did I really see what they looked like. The act of photographing is a decision to see well for a while, and so is printing. Having really seen the trees and house, I still don't quite know what to make of them. There is a morbid, gothic quality in them, but it is strongly counterbalanced by the bright sky. In a way, beauty and ugliness are in equilibrium. The branches on the tree look like black tears in the fabric of the sky.

The Humanistic Eye

EDOUARD BOUBAT

By WALTER ROSENBLUM

The late Dorothea Lange had envisioned a project in which cities, both large and small, were provided with a corps of photographers who would document the life of that community. She was speaking from her own FSA experience, when the government had been moved to document a social calamity of vast proportion. "Not only would it provide a documentary record for this and future generations," she said, "but it would also unearth, foster, and develop a wealth of new talent among our young photographers." In the few years since her death, that project has not come to fruition. But I would like to join Dorothea Lange in her dream and recommend Edouard Boubat, a nearly forgotten French photographer, as the leader of such an effort. I would gather all of our young photographers and say, "There is a Pied Piper whom you might follow. For his work is a guide to what can be accomplished, when we turn away from the false gods that are so prevalent in contemporary photography: brutality, violence, a sick concern with eroticism, or an escape into the mysticism of a supernatural world."

Edouard Boubat's photographs bring us another view of life that has more meaning and deeper truth. He has traveled widely, perhaps as much as any photographer today. He has discovered the unity of human experience. With love and great sensitivity, he has documented the life of peasants in China, fisherfolk of Portugal, people of



India, Africa, France, Italy, and the United States. He doesn't travel as a tourist or as a voyeur. He never hides or lurks behind corners as a Peeping Tom in search of a shocking image. He states his presence and accepts the challenge of the environment. To photograph in India, he lives with a peasant family, shares their food and lodging. "I am your friend," he says. "I am here to pay you homage." And when loved, people respond by loving. Sham and pretense disappear, an inner self is revealed for the photographer to record.

And Boubat knows the meaning of patience. His friend, author Michel

Tournier, tells of watching Boubat photograph in the Camargue, a national park where wild horses roam free. Sand bars, trees, and small inlets form a beautiful backdrop against which they constantly move. Boubat remained quiet for a long while, while the horses galloped about and the clouds kept forming ever-changing patterns in the sky. Tournier became mystified by the delay. Sensing this, Boubat said, "I am waiting for the picture to organize itself." For in Boubat's work, there is always the constant search for perfection, for the moment of true revelation.

Boubat has chronicled our time. In his philosophy, man is at the center of the universe. His work is his best effort to pay homage to the people he loves. Boubat affirms life for himself and for all of us who look at his pictures. We are truly in his debt for what he has accomplished.

★ ★ ★

When I arrived in Paris, some time ago, Boubat was having an exhibition at the gallery of the Bibliotheque Nationale. I met him at the opening, was introduced by mutual friends, and arranged to tape this interview at his home the following day.

He lives on a small and quiet street near the center of Paris. The foyer leads into a large studio room, the right half of which houses lights, tripods, and a small display of photographs. The other side of the room has a sitting area with two chairs and a large couch, and it was

Right, Coat of Leaves, Luxembourg Gardens, 1947; overleaf, First Snow, Luxembourg Gardens, 1954

35-MM PHOTOGRAPHY











Left, La Bretagne, France, 1949; above, Winter, Holland, 1960



In Nazare, Portugal, 1956

EDOUARD BOUBAT *continued*

there that we conducted the interview.

W.R.: For an apartment in the city, this room has a quiet and relaxed quality.

E.B.: Yes, I live in a quiet part of Paris; everything is very calm here, more quiet, in fact, than in India. When I go to India, one is never quiet for a moment. There is a child who brings the laundry, people who come to visit, someone who comes to tea. But here I remain very quiet, as this morning, without the phone ringing or telegrams being delivered. Here in Paris, as you see, it can be quite calm. And yet within 10 minutes I can be anywhere by metro. But here I have my home, my work, and my darkroom.

W.R.: Were you born in Paris?

E.B.: Yes. We lived mostly in Montmartre. My father was a cook who traveled widely, for he worked on boats. But he was also a poet, a remarkable man. I have one sister.

W.R.: Where did you begin your studies?

E.B.: I was a public-school student. I had no idea of what I wanted to do. I knew that I was interested in the arts, but it

was just a general feeling without proper focus. One day, upon leaving school, I saw a poster that advertised an entrance competition for St. Étienne, a trade school that taught crafts involved in book publishing—typography, lithography, gravure, etc. I took the examination, passed, and was admitted. Since it was necessary to choose a specific trade, I chose photogravure. It seemed interesting, mysterious. There was the laboratory with all of its complicated processes. We worked in the collodion process with glass plates, and I learned to be a photographer using the camera to make plates for reproduction. Then the war came along. Everyone was forced to work by the Germans. One did what one could. I worked in a metal plant for a while, and then I became a photographer in a gravure plant.

W.R.: How did you begin your own personal work?

E.B.: After the war, I bought a Rolleicord and began to photograph my friends. I photographed without a plan, without

knowing anything. I had no background in photography other than the little technique I had learned in photogravure. It wasn't that I was especially stupid, but after the war there were no books, no magazines, no information. I was totally ignorant. I know that it is hard to believe now with the flood of magazines and books devoted to photography that one finds everywhere. But in France after the war there was nothing. I had never heard of Cartier-Bresson, of Brassai, or anyone else. I was really a virgin. It had its advantages, however, because it meant that whatever I did had to come out of myself. I couldn't copy, I couldn't imitate the work of others. I was familiar with painting but not with photography.

W.R.: Is that when you made the photograph of the girl in the white blouse? [A famous early Boubat picture—Ed.]

E.B.: Yes, her name is Lella. We were living together at the time. She is a woman who has meant a great deal to me in my life. We had very little money. On Sundays we would visit my sister or



Chinese Villagers Near Peking, 1966

go for long walks, and I would photograph. One of my first photographs was of the little child in the Luxembourg Gardens wearing the coat made out of leaves.

It is strange, but everything that has happened to me has come out of my work. It was in 1948; I lived in a small room in Montmartre. Lella and I went for a walk. There was no money for the movies. We wandered into a small zoo with chickens, ducks, and geese. Lella pulled my arm and said, "There is Picasso." She had recognized him from a photograph that she had seen. I stared at Picasso, he looked at me, and then he left the zoo. I ran after him and said, "But you are Mr. Picasso." And he said, "Yes." I didn't know what to say next and I blurted out, "I would like to visit with you in your studio." He said, "All right. Come Thursday at 11 a.m." Just like that. And then Picasso said, "And what do you do?" He was a man who always interested himself in the work of others. "I'm a photographer," I replied. "All right, bring some photographs with

you. Let me see what you do."

And then it was Thursday at 11. We arrived at his studio, Lella had a small bouquet of flowers under her arm, and I had a portfolio of photographs. We waited, and Picasso appeared on a balcony off the living room. He descended the stairs. He was dressed quite simply; he wore the khaki trousers of an American soldier. He called me to one side, looked at my photographs and said, "If I were to photograph, I would photograph like you. Come here whenever you like." You can imagine what that meant to a young photographer who was trying to find his way!

With those words for inspiration, I gave up my job in the photogravure plant to concentrate on my own work. And as I worked I began to meet others. I met Lou Stettner who wrote an article about my work for *Camera* magazine. I met Rune Hassner who sponsored an exhibition of my work at the Museum of Modern Art of Stockholm. I met Robert Frank, and we became close friends.

Paris had become a kind of clearing house after the war; people would pass through on the way to and from the United States, and we would meet and speak about photography.

It was a very exciting time for me. Then, in 1951, I was invited to participate in a group show in Paris with Doisneau, Izis, and Brassai. It became a turning point in my career. I found a message for me at the exhibition written on a piece of newspaper signed by the director of *Réalités*, asking me to call. I had never heard of *Réalités*, there was no phone number listed, and so I never called. Fifteen days later there was a telegram saying, "Please come to see me. I like your photographs. I would like to give you an assignment." And so I went to see him, and he *did* give me an assignment. A few weeks later, he said to me, "Do you speak English?" I said, "I speak a little, like most Frenchmen." He said, "All right, if you speak English you will go to the United States." I was very happy with this

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CHARLES SWEDLUND: Do-it-yourself Communicator

or, how to convey
images via flip-books,
phenakistoscopes,
and fanciful shapes

By HARVEY V. FONDILLER

With commendable foresight, Charles Swedlund began preparations for a photographic birth announcement eight months before his child was born. He made profile photos of his pregnant wife virtually every night from Feb. 15 to Oct. 5, 1971; the last picture was made four hours before the blessed event. From the photos, he made a flipbook and sent copies to 250 relatives and friends.

Communicating images via flip-books, phenakistoscopes, and other fanciful devices is the preoccupation of Swedlund, a professor of photography who is a doer as well as a teacher. Probably no one in the field has utilized as many materials or methods to reach his public, however private. Intent on conveying visual imagery, he has created a mini-industry for purveying photography in various media.

A few years ago, he became interested in the phenakistoscope, a 19th century parlor toy that produces the illusion of motion by utilizing the principle of persistence of vision. In its classic form, a disk is placed on a spindle; the viewer twirls it while looking into a mirror through the disk's slots. Swedlund visited the International Museum of Photography at George Eastman House in Rochester, N.Y., and spent two days looking at dozens of antique disks. After photographing them (most were humorous—clowns and jugglers) he learned the principle that the action must end where it starts.

To produce a series of images suitable for a modern phenakistoscope, he used two techniques. In the first, the

action was staged and various poses were photographed. The second method—used for dancing and somersaults—involved making three exposures per second with a motorized Nikon. Swedlund packaged a portfolio containing 14 disks and a handle—price: \$5.

Swedlund, who is 40, earned B.S. and M.S. degrees in photography at the Institute of Design of the Illinois Institute of Technology. He gained experience through practical work—as a free-lance, specializing in art gallery and museum photography; as a partner in a color lab; and as an assistant in several Chicago

illustration and advertising photography studios.

He began exhibiting and publishing early in his career, starting with a student portfolio in 1957. His photographs have appeared in many books, including *The History of the Nude in Photography*, *International Photography Year Book 1965*, *Photography in the Twentieth Century*, *Be-ing Without Clothes*, *Views on Nudes*, and *Photography Annual* (1969, 1973, and 1974). Swedlund has had more than 25 one-man shows and is represented in 17 permanent collections, including the International



Photograph by the author



Portfolio in plastic case, "The Family that Bathes Together Stays Together," consists of 12 circular pictures mounted on Bristol board. Taken with fish-eye lens, the images are of Swedlund, his wife, and daughter Heather. Each copy of limited edition (100 copies) is signed by him.

Still photography with sound: when pressed in appropriate spot, Squeeze-Photograph below produces the meow of a cat. Postcard size, the picture can be sent through mail, but what happens when the mailperson happens to grip it firmly in that spot?



One-sixth plate daguerreotype of child (left) is one of 20 images in slide set made by Swedlund of selections from his large collection of photographica. The slides, intended for instructional use, are also purchasable from his publishing house, Anna Press, Cobden, Ill.

Copyright 1975 by Harvey V. Fondiller

Museum of Photography at George Eastman House, The Museum of Modern Art, Smithsonian Institution, National Museum of Canada, and Bibliothèque Nationale in Paris. He taught at the Art Institute and the Institute of Design in Chicago, State University College in Buffalo, N.Y., and Harvard University before joining the faculty of Southern Illinois University, Carbondale, where he is associate professor and acting chairman of the Department of Cinema and Photography.

A resident of Cobden, Ill. (population 1,000), 16 miles south of Carbondale,

Swedlund found that self-reliance was requisite if he was to succeed as a publisher and manufacturer of books, slide sets, and assorted photographic objects. He does the whole thing himself—photography, artwork, typesetting, and supervising the press run. When the birth-announcement project began, he marked his wife's feet on the floor of the Chicago storefront that was their home, unrolled seamless paper, and made profile photos with a Hasselblad bolted on top of a radiator exactly 10 feet away. During nightly sessions in the months that followed (he missed only two sessions in the entire

period), he photographed at precisely that distance—in motels, a New Hampshire farm, the home of a relative in Chicago, and finally in the living room of his present home. Then he made prints, traced the outlines and filled in the figure with black ink, and made Kodalith (high-contrast) negatives, which a local printer showed him how to strip in for offset printing. After the press run, Swedlund collated and stitched the cut pages, and put a backstrip on the flipbook. Aside from its primary purpose as a birth announcement, it is on sale at \$1.25 per copy. Local doctors give it to expectant mothers, and a set of slides

(produced by Swedlund from the photographs) has been used at a meeting of the American Medical Association.

In 1973, Swedlund established the Anna Press (named after his mother) as an outlet for his self-produced books and other items. Among its first products was another flip-book based on his wife's pregnancy—one made by photographing her every 10 degrees as she was rotated in a full circle. Its 35 photographs were taken, he recalls, in "one three-hour standing." Then he published a packet of 3½x7-inch stereographs, printed with a 300-line halftone screen. The 15 multiple exposures of landscape with figure are sold with a plastic viewer for \$5.

Reproduction quality is of paramount importance to Swedlund. When planning a book with 25 of his photographs, he examined the 900 volumes in his personal photographic library to find a printing company capable of producing quality work. Only three presses met his standards; of these, he selected the Meriden Gravure Company, Meriden, Ct. The book, *Charles Swedlund Photographs*, is available softbound (\$6.50) and in a hardcover version limited to 100 copies, each of which contains an actual photograph (\$75).

Among Swedlund's creations are 25 nine-inch buttons, each bearing an image produced by a fish-eye lens. (For this venture, he purchased a \$1,200 button-making press.) Mounted on a 16-inch square mat board and framed, individual buttons sell for \$125. A condensed version, "The Whole Show," consists of 1¼-inch duplicates of the original images. An edition of 125 sets was marketed—price, \$30.

A fish-eye-lens image is as inclusive as the range of Swedlund-produced photographic merchandise. The items include:

Photo-Puzzle 1. A 49-piece jigsaw puzzle that comes unassembled in a brown paper bag. Get it all together and you'll make the scene: a figure in landscape, produced by photographing on black-and-white film through blue, green, and red filters. The color-separation negatives were printed as a tone-line rendition on an offset press with yellow, red, and blue ink. The puzzle is priced at \$3. "It's a continuation of the serious things I've done," says Swedlund. "I'm trying to inject the element of involvement and participation by making the photograph

Instead of gargoyles, sprinklers, or giant toadstools on his front lawn, Swedlund prefers to display some of the devices created by his non-stop imagination. Among them: vending machines that eject pictures after coin is inserted; a 3-D Viewing Machine that shows 12 pictures for a penny; and a Movie Viewing Machine that provides a short film for a nickel. An inveterate tinkerer, Swedlund adapted the machines to photographic use.

Swedlund's version of slot machine: images of body parts appear in the cutouts that would ordinarily be decorated with apples, oranges, cherries, and other symbols of Las Vegas.





Red, heart-shaped box contains Heather's Valentine: various aspects and moods of the subject on circular mounts. Swedlund ordered boxes in quantity, paid 35 cents each.



This photographic puzzle comes in a plain brown wrapper (bag), possibly because the jig-sawed image would be rated X these days.



Photograph by the author

COMMUNICATOR *continued*

different from—and something that goes beyond—what hangs on a wall."

Squeeze-Photograph. An actual $3\frac{1}{2} \times 5\frac{1}{2}$ -inch photograph; squeeze it and you hear a cat's *meow*. (Naturally, there's a gimmick inside that produces the sound effect; \$10.)

Do-It-Yourself Portfolio leaves the darkroom work up to you; it's a plastic box containing 10 high-contrast 35-mm negatives. Lest you think that everybody will get the same results, Swedlund suggests that the user move, jar, tap, or vibrate the easel during exposure. This produces tonal gradations, making each print unique (\$2.50).

Heather's Valentine is an 8-ounce candy box filled with heart-shaped pieces of Strathmore Illustration Board on which photographs are dry-mounted. Even the title is a photographic print, which Swedlund mass-produces by having a student make them under his supervision. He buys the red containers from a box company, shapes the photos with a circle-cutter.

The Family that Bathes Together Stays Together. A portfolio of 12 photographs of Swedlund and his family; made with an 8-mm fish-eye lens. The prints are $3\frac{1}{2}$ inches in diameter, dry-mounted on Bristol board. Edition: 100 signed, numbered copies—\$20.

The long list of Swedlund's devices

Swedlund and his modern-day phenakistoscope disk; it carries 16 images, some of which are identical. Placed on wooden spindle, disk is whirled by viewer who looks into mirror through the slots to see silhouetted figures cavort. Portfolio of 14 disks sells for \$5.

35-MM PHOTOGRAPHY



Print of nude in woods (above) was made from one of negatives in Swedlund's Do-It-Yourself portfolio, a box of ten individual high-contrast 35-mm negatives. "I personally moved, jarred, tapped, vibrated the easel during exposure. This produced a gradation of tones in resulting prints. . . . I began to like the uniqueness of each print," he says.



Swedlund advocates taking wooden nickels, provided they have a circular picture affixed to one side; another excuse to display a photograph.

Evolution of a pregnancy can be seen in flip-book Swedlund created by silhouetting pictures taken almost every day during his wife's gestation period. He also did binding and publishing. Last page, (below), gives baby's birthdate, other statistics.



includes a scale on which each viewer sees a different photograph, depending on his weight. Then there's his Cash Register; press any key and a picture pops up instead of a price. The "coins" in the cash drawer are gold-and-silver snapshots of Aaron Siskind and Harry Callahan—two of his teachers—to whom the device is dedicated.

Another of his contraptions is one that he calls the Red, Blue, Green machine. It consists of three Kodak Ektagraphic slide projectors with trays of 80 black-and-white 35-mm slides, each of which was exposed through either a red (No. 25), green (No. 58), or blue (No. 47) filter. Swedlund's original conception—a modern adaptation of Maxwell's

principle of additive color—was to superimpose each set of three images on the screen and thus reproduce the original scenes in their natural hues. He abandoned the idea on discovering that the three matched projectors (which had consecutive serial numbers) couldn't be synchronized. So he intentionally mixed up the slides and projected them in random groups of three. A total of 450,000 combinations can be thus produced, which would require 755.555 hours, or 32.479 days, of constant viewing if anyone wanted to see them all, which seems less than likely.

Loathe to forsake this chimerical venture, Swedlund decided to convert some of the random images into

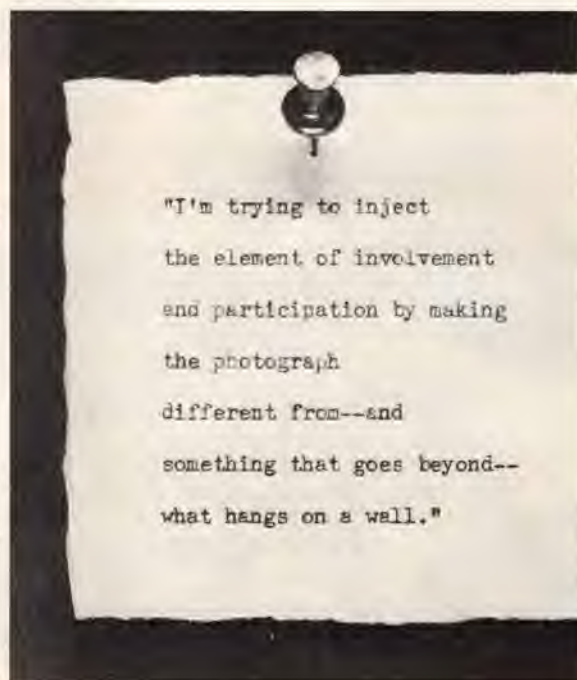
tangible form. Using the Color Key process, he made three-color prints, arranged to have them reproduced by offset, hired a press and pressman by the hour, and watched over the entire printing process, including make-ready, registration, and press run. He considers each of the offset reproductions an "original," since they were made under his personal supervision. "A Portfolio of Color Prints," consisting of six 5¼ x 8-inch images on 11x14 coated cover stock, was issued in a limited edition of 125 signed copies, priced at \$20.

Swedlund has built or adapted a variety of other machines and objects, including a 10-cent vending device for press-apply photos (their sticky backing



Unorthodox-shaped picture above folds up into a polyhedron (that's a solid formed by plane faces). Philosophy behind Swedlund's relentless search for inventive forms of picture display is verbalized in quote from him, below right.

Imaginative cover for Swedlund's "Handbook of History, Materials, and Processes" symbolizes the man's inability to leave a photograph in any conventional state.



"I'm trying to inject the element of involvement and participation by making the photograph different from--and something that goes beyond--what hangs on a wall."

COMMUNICATOR *continued*

adheres to any surface needing decoration) and a magnet-filing photograph. The latter consists of a 5x7 picture and iron filings in a plastic-enclosed frame; with a magnet (supplied), the viewer can rearrange the filings on the picture surface. He has produced photo-polyhedrons and a Six Photo Puzzle (a cube with six different parts of six similar photographs on it). He has even extended the limits of photography (beyond the visual to the olfactory) by devising a Smell Photograph: "scratch the surface inside the circle and smell."

Among the products he markets are numerous slide sets, made from his own photographs and illustrating various techniques and esthetic approaches. They include:

Landscapes. Outdoor photographs, shot "straight" with a 4x5 view camera.

Multiple Exposures with the Figure. All are multiple nudes; the images were produced in the camera rather than by sandwiching negatives or by combination printing. Swedlund has a predilection for associations produced by accidents or vaguely controlled situations. "There's no way I can pre-visualize what I'm doing," he says. "I'm trying to *discover* the idea, while

working with various processes, instead of *proving* an idea with the photograph."

Camera Techniques—a set of 24 slides, including examples of double exposures, multiple exposures, and photographs made by multiple exposure through a matte box. Two of the photographs were produced by placing a 16-segment grid in the back of an 8x10 view camera, so that each of 16 individual areas is exposed separately. Other photographs were made with a Widelux camera (one that uses 35-mm film but produces a 2 1/4-inch-long negative; the lens rotates during exposure). In some images, a slow shutter speed (1/15 second) was used

35-MM PHOTOGRAPHY

BEARD LESS
charles swedlund
1975



Swedlund documented the shaving of his beard, apparently a traumatic experience in reverse, and consigned the event to another flip-book. These images are reproduced

life-size so that readers who own scissors may cut them up and put together their own Swedlund flip-book.

and the camera was moved during exposure.

In teaching the history of photography, Swedlund utilizes the resources of his personal collection, numbering more than 5,000 items. He has compiled slide sets on the daguerreotype, ambrotype, tintype, cabinet photograph, and carte-de-visite, at prices ranging from \$7.50 to \$18.75. The daguerreotype set (\$15) contains 20 images, including a bearded lady midget, Chinese boy, lady in a sexy pose, English soldier, and sleeping child. On a macabre note, the post-mortem set illustrates the practice—common with early practitioners of the heliographic art—of

photographing deceased persons. The images include a man lying in a casket, young lady holding tinted flowers, and mother holding her dead child.

Another set, "Photographic Objects," shows many of the ways that photographs have been integrated into the household or as personal adornment: glass paperweights containing pictures, original prints distributed as cigarette premiums, photographic jewelry, transparencies that were hung in windows, and table stereo viewers.

Swedlund's collection of photographica is so extensive that it served as the basis for a series of

exhibitions on the history of photography at Southern Illinois University. Included were images made by the earliest processes, as well as salt, albumen, and platinum prints and pictures made in No. 1 and No. 2 Kodaks. His collection includes examples of travel photographs published by 19th century photographers, hand-colored and freak photos, and photographic postal cards.

In 1966, while teaching at State University College in Buffalo, N.Y., Swedlund used mimeographed copies of his notes, stapled together, in lieu of a textbook. The regional editor of a large publisher became interested in the

continued on page 120

McCLELLAN STREET, FORT WAYNE, INDIANA



It was two summers ago when twins Dave and Pete Turnley, then 17-year-old high school students, discovered McClellan Street on the poor side of their home town, Fort Wayne, Ind. It happened quite by chance. Pete had taken a picture of an old man elsewhere in the city, entered it in a picture contest sponsored by Eastman Kodak, won a prize, and needed a release from the man so the picture could be published and used for promotional purposes. Together they traced the man to his home address and found him sitting with several elderly cronies on the front porch of his McClellan Street house. At first he refused to identify himself, explaining that the last time he had done so he wound up in jail. Fortunately, his friends finally persuaded him to sign his name, everybody relaxed and got friendly, and the boys made their first acquaintance with a neighborhood they never knew. "After that time," says Dave, "we stopped often to *continued on page 110*

A Photographic Essay by Dave and Pete Turnley

BY RICHARD BUSCH









DO
NO
BLOCK







UNCOMMON COLOR BY MITCHELL FUNK

Mitchell Funk says that it should be possible for a photographer to be creative and commercial at the same time. As the son of an advertising agency art director, he was exposed early to both the problems and the potentials of making one's living with a camera.

During his five-year career as a professional photographer, his images have been used for magazine covers, advertising illustration, book covers, record album jackets, movie posters, and

annual reports. His most recent assignment: a five-week trip around the U.S. shooting the country's largest industries for the cover of *Fortune*.

"Photography has become a business of specialists," Funk says, "and I think that's sad. In my work, I use a variety of photographic techniques and procedures to enhance the subject matter. This gives me options: first, to present a clear visual record of the subject; then, to give pictorial variations of it.

In this fashion, I thoroughly cover an assignment, both in terms of

documentation as well as personal interpretation."

If Funk has a specialty, it's his highly graphic use of color. "I like the use of light in combination with pure color," he explains. "I'm most fascinated with monochromatic color, or the combination of two strongly contrasting colors. I also want to go beyond the ordinary and turn common, everyday subjects into exciting and unusual photographs."

He does. 









The secret of the opening selection of Mitchell Funk's several delusive representations is triple exposure. Building was photographed with 500-mm lens on Kodachrome II, film rewound, then shot again an hour and a half later. Shot of man in window was then double-exposed onto first double-exposure in slide copier through blue filter.

Green buildings were shot with 10-mm fish-eye lens through orange filter on Ektachrome, processed as negative, producing the off-color. Sun and plane were shot with 1,000-mm lens, double-exposed with first shot in slide copier onto Kodachrome II.

Man on the run was taken with 200-mm lens on negative film, buildings with 500-mm lens through red filter, gold window with 105-mm lens in late afternoon. Three shots were then multi-exposed together in slide copier on Kodachrome 25.



Ghostly trees were shot with 28-mm lens through yellow filter on Ektachrome-X processed to negative. Moon was shot with 500-mm lens for larger image, then both slides double-exposed in copier. Old brick wall was photographed in late afternoon with 24-mm lens, Kodachrome II, film rewound; then next day, child was double-exposed in similar lighting into shadow area at end of wall. Fancifully colored New York landmark buildings were taken with 28-mm lens on Kodachrome 25 through deep-purple filter in daylight. Film was rewound and green windows double-exposed with 300-mm lens through green filter. All work was done on 35-mm SLRs.



End of an Era: THE ARABERS OF BALTIMORE

Essay by Roland Freeman

Arabing, selling fruits and vegetables from horse-drawn wagons in Baltimore City, is a part of a tradition that historically began about 3,000 to 4,000 years ago and was practiced in ancient African cities as well as urban centers of medieval Europe and Asia. Baltimore is one of the few American cities in which this trade is still practiced. Once a major means of supplying city-dwellers with fresh vegetables and fruits, Arabing has largely disappeared from America's urban areas.

The Arabs in Baltimore represent a style of life, rich in folklore, that will probably come to an end in the next few years. The city itself

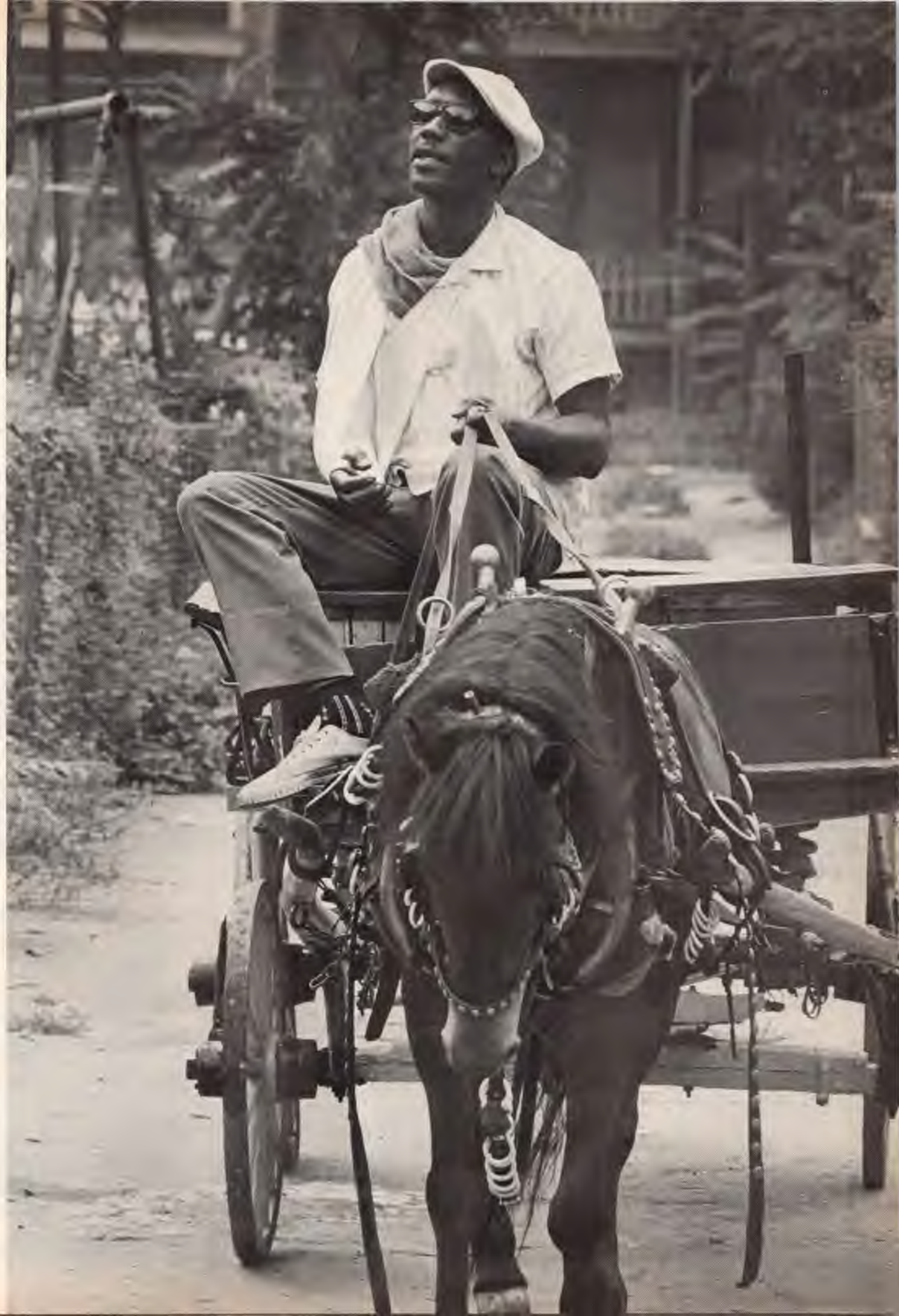
Roland Freeman is a free-lance photographer who was born in the black ghetto of West Baltimore, Md., in 1936, and spent his early childhood there, learning the ways of the streets. He left home at the age of 12, traveled around America, lived several years in Paris, and has lived in Washington D.C. since 1960. This project was born when he returned to Baltimore in the late 1960s to visit his grandmother, and was flooded with the many pleasant experiences of his childhood. "Most of the things I'd seen done photographically of the black community only depicted the deprivation and impoverished conditions of lower-income people," he says. "I decided I wanted to make images of the brighter side of what is now called the ghetto." This essay is part of a larger Baltimore Portfolio. Freeman has received two fellowships from the National Endowment for the Humanities—he was the first photographer to receive one—and he is an associate member of Magnum.

has been trying to get rid of these guys for the last several years—which is one of the reasons I undertook this photographic study.

First, the city tried to outlaw stables within the city limits, where Arabs keep their ponies, horses, and mules. But the Arabs formed an association and fought City Hall. They won because Pimlico Race Track also has its stables within the city limits, and the city gets a lot of revenue from the track.

Second, the city moved the produce center where the Arabs buy their produce to the outskirts of the city. This is too far for the Arabs to drive their ponies. So the much more fortunate men who can afford to have begun to Arab on trucks, and the others will fall by the wayside, especially now that the areas in which most of the stables are located have been marked for urban renewal, and the city will not allow the building of new stables once the old ones are torn down. So men who have known nothing else for the better part of their lives, and some who are too old to learn anything else, will be faced with having to find new employment. Many will no doubt have to seek public assistance.

Maryland is noted for its seafood
and one popular variety is hard
crabs, which people steam. When
the Arabs sell these crabs,
they do it with the song June
Fulton is singing here:
Hey, Lady, come get
your hard crabs alive!
Four dead out of five.
Every time the wheel turns,
Another crab dies.
So hurry, hurry, get your hard crabs!







At dawn, Araber Boozer, above, leaves stable and heads for the produce center. Work days for these men begin about 6 a.m. Left, laborers load and unload fruits and vegetables at Baltimore produce center. Right, another Araber, Monk, his wagon loaded with produce and two young helpers, begins his rounds.





Araber June Fulton chats with a customer along his route as his son sits on wagon seat waiting to go. In Baltimore, when an Araber sells watermelons, the custom is that it must be plugged so the customer can taste it before deciding whether to buy any. At right, such a sample is being offered. Opposite page: another Araber waits with his wares for customers on his route.









Young attendant at Arabers' stable leads a pony to water (opposite page). Above, other young stable hands and wagon helpers pose in front of antiquated stable building that is soon to be torn down. Left, Winfield, an Araber, with his favorite pony, named Prince.



"June, Monk, and Winfield, all duded up to go to a funeral of a fellow Araber," writes Freeman of top left picture. June, left, relaxes in his backyard while his wife peels potatoes for a meal. Above, June and Monk, under umbrella, are among the last to leave gravesite of a fellow Araber who was killed accidentally by a truck. Right, a wintry scene in South Baltimore. Arabers go in snow, too, to serve their many steady customers.





Freeman found a pleasant composition in these old wagon wheels that bear all signs of a long, hard life. Below, stable owner Walter Fisher, tall man at right, supervises youngsters as they sort out harnesses and other gear he must sell because his building is to be razed following a recent city ordinance and the onslaught of urban renewal. Right, "a pony dies. He is lying in the alley outside of the stable where a truck will pick him up within the hour," writes Freeman of this sad scene symbolizing the end of an era.





Gallery35



**JAMES
JOERN**

"Their strength and beauty were timeless, and they never seemed to run out of gas," said professional James Joern of Philadelphia of his uncle's two work horses. The horses were pulling a buckboard in Nebraska's Sand Hills when Joern took this photograph with a RFDR and 21-mm lens. Film was Plus-X.



PETER GERT

Gert's tired sister, Sandy Weissenberg, pouted when he wanted to photograph her in Volkspark, Berlin, Germany. That was just what he wanted, and he caught the moment on Tri-X with an SLR and 55-mm lens. Exposure was set at 1/250 and f/8. The overcast day gave him his favorite outside light, he said.





AKIRA WAKATSUKI

Wakatsuki transformed a noisy fisherman dragging seaweed from the sea into this haunting sea monster by employing high contrast and tones of black and white only. Camera was SLR with 135-mm lens and R2 filter; exposure, 1/250 and f/8. Two men in wet suits, left, were shot through 21-mm lens and a red filter. Exposure was 1/250 at f/11. For both shots, film was Tri-X rated at 800 and pushed in developer, D-76.



JOHN GIANNINI

The bright haziness before Cambodian gunner at top is caused by recoilless rifles firing from behind.

Battle scene was recorded with SLR, 200-mm lens, and Tri-X. Giannini said of picture at right: "A few minutes later a sniper shot the camera out of my hands as I took a picture. I was seriously wounded, my second in four months." Camera was RFDR with 50-mm lens; Tri-X film was exposed at 1/125 and f/5.6. Lost kitten symbolized "what country had been—quiet, gentle."









JOHN GIANNINI

A Cambodian platoon leader calmly watches for the enemy. Giannini used 105-mm lens on SLR, set exposure at 1/500 and f/8. Above, relatives weep for dead. The scene was shot with an SLR and 50-mm lens, at 1/250 and f/11; film, Tri-X. Bodies being stacked on cart by comrades were photographed with an SLR and 24-mm lens. Exposure was 1/250 and f/11. Besides spending three years in Indochina, Giannini also has covered the war in Ireland for a year, and European politics.



BOB ADELMAN

Photojournalist Bob Adelman liked baseball enough to shoot a book's worth of pictures.

Using an SLR and 20-, 50-, and 135-mm lenses, he photographed these Pittsburgh Pirates during spring training in Bradenton, Fla., and in Pittsburgh, Pa. Man behind catcher's mask is Manny Sanguillen, whom Adelman posed with the sun coming through the mask so his face would show. Adelman also is photographer of *Gentlemen of Leisure*, *Down Home*, and *Ladies of the Night*.



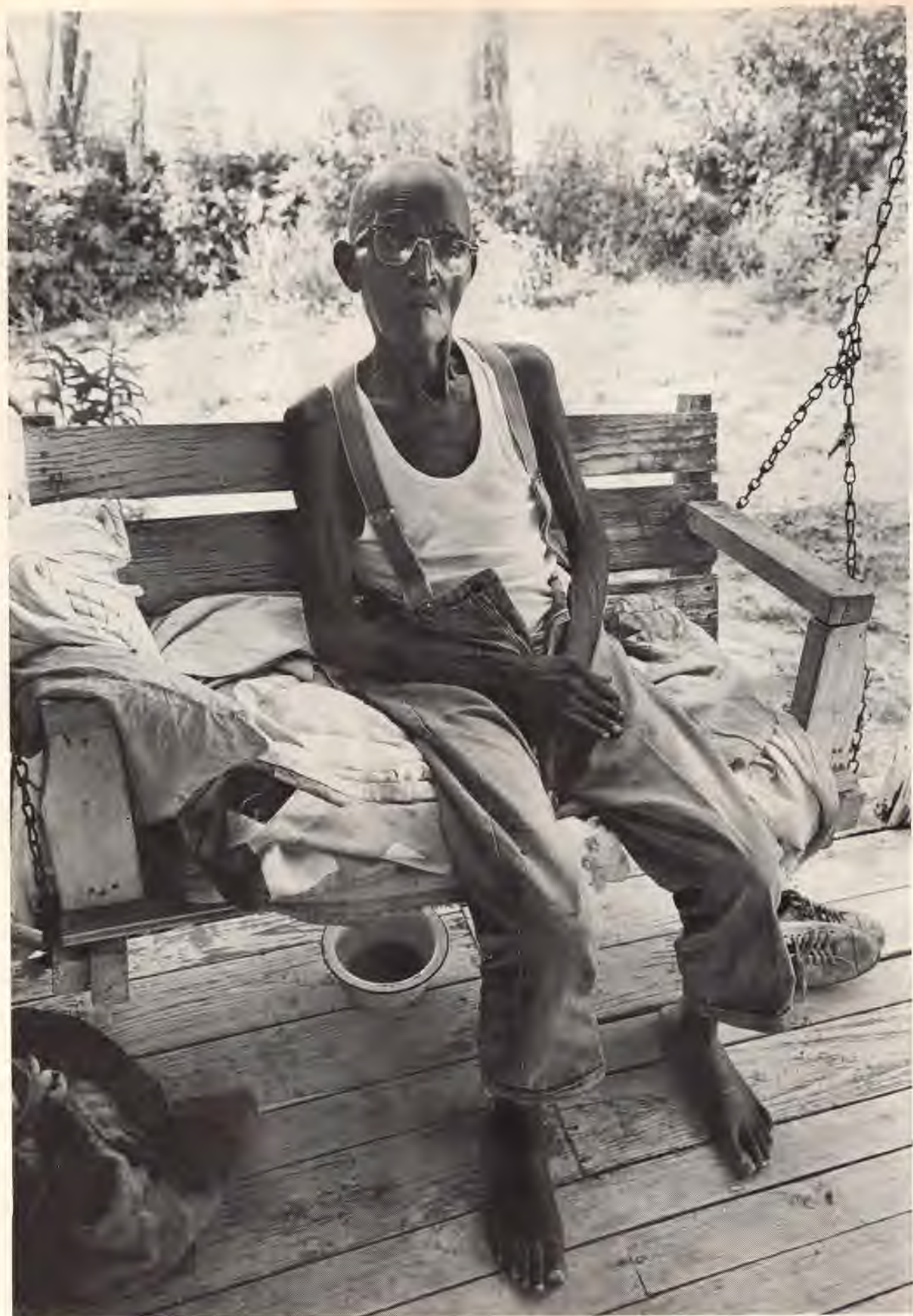






JAMES JOERN

Joern combined men, sculpture, and the soft, even glow from the skylight in a museum to make this mood-filled shot, "Muse." Film was Panatomic-X exposed in an old Argus C-3 with 50-mm lens. Rugby scrumage in Bryn Mawr, Pa., was shot as part of an assignment on the sport in the Delaware Valley for a Philadelphia newspaper's magazine. Camera was SLR with 28-mm lens; film, Tri-X. Carousel horses wait silently in western Pennsylvania, captured by RFDR and 25-mm lens on Plus-X.





HASSE PERSSON

This elderly man lounged on a porch swing in Louise, Miss., while professional (since age 15) Persson shot him for his book, *Amerikabilder 1974*. He also has done one other book, *New York 1969*; both were published in Sweden. RFDR and 28-mm lens captured the dignity of years. Film was Plus-X. He took beach scene with same equipment at Coney Island, N.Y., on the Fourth of July, but decided not to look into the camera. Object was to "get a picture of the masses of people, and yet the loneliness of being one of millions of persons on an overpopulated and garbage-filled beach."



HASSE PERSSON

These three scenes, shot for *Amerikabilder 1974*, show America through a foreigner's eyes.

Persson was struck by "how little personality Americans put into their homes. It looks as if they moved in yesterday and are moving out tomorrow. The only living thing was this cactus that needs very little watering," he said.

New York's gay liberation parades yielded these interesting back views.

The spire is part of church tower in Fayette, Miss. Here, he used an SLR, 200-mm lens, and Plus-X film.







JIRI HORAK

Czechoslovakian photographer Jiri Horak, 34, made these disturbing photographs with a 28-mm lens on an SLR using available light. Film was Orwo NP 27, an East German film equivalent to ASA 400. Two shots on this page were made in the late afternoon; photograph on opposite page was taken during the morning. Photograph of man and chimneys was shot at 1/30 second and f/4. Man and buildings were shot at 1/60 and f/5.6. Girl ready for chopping block is 1/250 and f/8.







BERNARD PIERRE WOLFF

On assignment for UNICEF in Lahore, Pakistan, Wolff visited this mosque. "I was so tired (after a full day of shooting) I almost decided not to climb the hundreds of steps to reach the top," he said. The late afternoon light provided good shadows that he shot on Tri-X with an SLR and 105-mm lens. Exposure was set at 1/125 and f/11. Above, Wolff spotted this sharp silhouette against a bus about a block away in Bridgetown, Barbados, very late in the afternoon. He ran to shoot it before the sun disappeared, using a RFDR and 35-mm lens.



**WALTER
VOGEL**

A 21-mm lens on a 35-mm SLR created the impression of a huge beach, which actually is about five feet high. The hotel is located near a street, so the photographer stood near the water, set exposure for 1/125 and f/16, and shot in soft daylight on Ilford FP4. This souvenir seller is set up outside the Duomo in Milan. Shot was taken with SLR, 21-mm lens, and Plus-X. Both shots are Vogel's attempts to document change and destruction—the change from happy vacationland to desolate beach and from holy place to souvenir shop.





ROBIN MOYER

A dead deer at dusk and an observant photographer combined to make this powerful image. Moyer almost decided not to take the picture. "I drove by once on the opposite side of the road, turned around, looked, passed it, turned around, looked, stopped, and shot—three frames, waiting for the automobile in two of the three," he said. Exposure was set to allow blurring of car—1/15 second at f/11.

DAVE BARNES

Professional photographer Barnes hiked four miles from Ozette to Cape Alava, Wash., to take this picture. The dramatic effect was achieved through use of a 21-mm lens on his RFDR camera. Tri-X film was exposed at 1/500 and f/11.





**LEV
BORODULIN**

No technical data available for
Lev Borodulin photographs.





**RICHARD
GRAY**

Landscape scene was shot in Park County, Colo. "I set the camera on a tripod and waited for the edge of the sun to drop down below the middle bank of clouds. I shot 20 exposures in about 15 minutes, but only one had just the right amount of flare," Gray says. Shot made with SLR on Panatomic-X through yellow No. 2 filter. Exposure was 1 second at f/16.



601 TELEPHOTOS

A Directory of Long Lenses for 35mm Cameras

You say you'd like to get closer to your subjects, but lack the gumption? You say you'd like to shoot the setting sun as a huge red ball, but don't want to crop and get equally huge clumps of grain? You say you're in a rut and would just like to be able to change your point of view . . . but don't know where to begin? Well, Bunky, try a telephoto lens. It won't cure your arthritis, but it just might help your photography!

At one time, photographic writers went to great pains to spell out the differences between "long" and "telephoto" lenses. Both kinds have longish focal lengths—greater than the "normal" focal lengths of the cameras for which they were designed—and therefore make the images bigger. But the telephoto lens, by an optical trick involving negative lens elements, had its physical dimensions trimmed down to make it more convenient to handle. Thus the 200-mm telephoto lens might stick out from the body of the camera only half as far as the 200-mm "long lens"—even though both, optically, were the same 8 inches in focal length. But the idea went across so well that the distinction between the two types got loosened by discussion and is now just about worn away by parlance.

Nowadays, just about any lens for the 35-mm camera much longer than the "normal" 50-mm lens is called a telephoto, regardless of its exact design, and we have included all presently known—601—specimens for 35-mm cameras in the following chart.

We've kept some distinctions, however. The macro longies, for example, have focusing mounts that enable you to come in much closer than the usual limit of a few feet to your subject, for big pictures of little things. Zoom lenses are variable in their focal lengths and yet keep your subject in focus even though you adjust the focal length. Included with them are varifocal lenses, theoretically less ambitious in design; they do not attempt to keep your subject in focus at all times, and you may have to refocus when you shift magnification. Some of the newer zooms and varifocals offer macro capabilities, incidentally. Most of the lenses listed under mirror optics are catadioptric in design, and incorporate elements that refract light and elements that reflect light; these latter elements, of course, are mirrors. And the few special lenses near the end of the listing are mostly each in a class by themselves, such as the 200-mm Auto Medical Nikkor, which incorporates an electronic flash unit.

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
75-mm	Alpa Xenar	3.5-22	13 in.	Manual	Alpa	Karl Heitz, Inc.	\$299.50
75-mm	Biotar	1.5-16	2.6 ft.	Preset	Exa, Exakta	Exakta Camera Co.	\$199.50
75-mm	Schneider/Tele-Xenar	3.8-22	3 1/2 ft.	Manual	Robot Royal, Recorder, Motor Recorder 26, 24, 18	Karl Heitz, Inc.	\$329
75-mm	Schneider Xenar	3.6-22	3 1/2 ft.	Manual	Robot Star 25, 50, 90, Junior, Star I, LW	Karl Heitz, Inc.	\$299
80-mm	Biometar	2.8-22	2.8 ft.	Automatic	Exa, Exakta	Exakta Camera Co.	\$135
80-mm	Biometar	2.8-22	3 ft.	Automatic	Praktina II A	Edixa Camera Co.	\$149.50
80-mm	Meyer Primotar	3.5-22	3.3 ft.	Preset	All Exa, 35-mm Exakta models	Exakta Camera Co.	\$49.50
80-mm	Nikkor	4-22	3 1/2 ft.	Automatic	Nikonos II	Nikon Inc., sub. EPD	\$246.75
80-mm	Tessar	2.8-16	3.3 ft.	Preset	Exa, Exakta	Exakta Camera Co.	\$59.50
80-mm	Zeiss-Biometar	2.8-22	2.8 ft.	Automatic	Praktina	Edixa Camera Co.	\$149.50
85-mm	Alpa-Takumar	1.8-16	2.75 ft.	Automatic	All Alpas	Karl Heitz Inc.	\$449.50
85-mm	Auto-Nikkor IC	1.8-22	3 1/2 ft.	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPD	\$299
85-mm	Auto Topcor	1.8-22	3 ft.	Automatic	Topcon Super DM	Paillard Inc.	\$247.80
85-mm	Canon FD SSC	1.8-16	3 ft.	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$260
85-mm	EBC Fujinon	4-16	3.3 ft.	Automatic	Fujica ST-701, 801, 901, Pentax, Praktica mounts	Fuji Photo Film U.S.A. Inc.	\$250
85-mm	F. Zeiko Auto-T	2-16	2 ft. 8 3/8 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$299.95
85-mm	Jupiter 9	2-22	4 1/2 ft.	Manual	Zorki, Leica, Canon thread	Arel Inc.	\$99.95
85-mm	Konica Hexanon AR	1.8-16	39.4 in.	Automatic EE	Konica Auto Reflex, Autoreflex A, T, T-3, A-1000, A3	Konica Camera Co.	\$229
85-mm	Mamiya/Sekor Auto SX	1.7-22	3 ft.	Automatic	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$219.50
85-mm	Mamiya/Sekor Auto SX	2.8-16	2 1/2 ft.	Automatic	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$144.50
85-mm	MC Rokkor-X	1.7-16	3.3 ft.	Automatic	All Minolta SLRs	Minolta Corp.	\$264
85-mm	Planar	1.4		Automatic	Contarex	H.P. Marketing Corp.	\$598
85-mm	Schacht	2.8-22	3 ft.	Preset	Edixa, Pentax	Edixa Camera Co.	\$80
85-mm	Sonnar	2-22	3 1/2 in.	Automatic	Contarex	H.P. Marketing Corp.	\$420
85-mm	Spiratone Auto	1.7-16	3 ft.	Automatic	Argus/Cosina, Canon FT, FX, TL, Exakta, Fujica, Mamiya/Sekor, Minolta, Miranda, Nikkormat, Nikon, Olympus FTL, Pentax, Petri, Praktica, Ricoh TLS, Yashica, Canon F-1, FTb, TLb, Olympus OM-1, Pentax ES, F	Spiratone, Inc.	\$89.95; latter six, \$99.95
85-mm	Steinheil	2.8-22	6 ft.	Manual	Praktina	Edixa Camera Co.	\$80
85-mm	Steinheil	2.8-22	6 ft.	Manual	Exakta	Exakta Camera Co.	\$75
85-mm	Super-Multi-Coated Takumar	1.8-16	2.7 ft.	Automatic	Honeywell Pentax H1a, H3v, SP 500, Spotmatic, SL I, II, IIa, ES, F, ES II	Honeywell Photographic Prods.	\$264.50
85-mm	Takumar Achromatic	4.5-22	2 ft.	Automatic	Honeywell Pentax H1a, H3v, SP 500, Spotmatic, SL I, II, IIa, ES, F, ES II	Honeywell Photographic Prods.	\$1,400
85-mm	Vivitar	1.8-16	5 ft.	Preset	"T" system	Ponder & Best, Inc.	\$92.50
85-mm	Zeiss Sonnar	2.8-22	3 1/2 ft.	Automatic	Rolleiflex SL 35	Rollei of America, Inc.	\$180
90 mm	Dynarex	3.4-16	4 ft.	Automatic	Icarus 35, 35S-BM	H.P. Marketing Corp.	\$169
90 mm	Elmar-C	4-22	3 ft. 4 in.	Click-stop	Leica CL	E. Leitz, Inc.	\$285
90 mm	Elmarit	2.8-22	3 ft. 4 in.	Click-stop	Leica M2, M3, M4, M5, Leicaflex, Leicaflex SL and SL2 with adapter	E. Leitz, Inc.	\$369
90 mm	Elmarit (head only)	2.8-22	19 1/2 in.	Click-stop	Leica M2, M3, M4 with universal focusing mount; Leicaflex, Leicaflex SL and SL2 with adapters	E. Leitz, Inc.	\$267
90 mm	Elmarit-R	2.8-22	28 in.	Automatic	Leicaflex, Leicaflex SL, Leicaflex SL2	E. Leitz, Inc.	\$393
90 mm	Summicron (head only)	2-22	2 1/2 ft.	Click-stop	Visoflex II & III housing; Leicaflex, Leicaflex SL and SL2 with adapter	E. Leitz, Inc.	\$240
90 mm	Summicron	2-22	3 ft. 4 in.	Click-stop	Leica M1, M2, M3, M4, M5	E. Leitz, Inc.	\$375
90 mm	Summicron-R	2-16	28 in.	Automatic	Leicaflex, Leicaflex SL, Leicaflex SL2	E. Leitz, Inc.	\$395
90 mm	Tele-Elmarit	2.8-16	40 in.	Click-stop	Leica M2, M3, M4, M5	E. Leitz, Inc.	\$297
100 mm	Alpa Kinoptik	2-22	33 1/2 in.	Automatic	Alpa	Karl Heitz, Inc.	\$799.50
100 mm	Asanuma	2.8-22	4 ft.	Automatic	Pentax, Minolta, Konica EE, Canon FTb, Nikon	Asanuma Corp.	\$105-\$114
100 mm	Auto Topcor	2.8-22	4 ft.	Automatic	Topcon Super D, DM	Paillard Inc.	\$167.25
100 mm	Canon FD SSC	2.8-22	3.5 ft.	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$216
100 mm	E. Zeiko Auto-T	2.8-22	3 ft. 3 3/8 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$219.95
100 mm	EBC Fujinon	2.8-22	4 ft.	Automatic	Fujica ST-701, ST-801, ST-901, Pentax/Praktica mounts	Fuji Photo Film U.S.A. Inc.	\$185
100 mm	Konica Hexanon AH	2.8-16	39.4 in.	Automatic EE	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000, A3	Konica Camera Co.	\$199
100 mm	Mamiya/Sekor Auto SX	2.8-16	4 ft.	Automatic	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$159.50
100 mm	MC Rokkor-X	2.5-22	4 ft.	Automatic	All Minolta SLRs	Minolta Corp.	\$209
100 mm	Meyer Auto Trioplan	2.8-16	3.6 ft.	Automatic	Exa, Exakta	Exakta Camera Co.	\$80
100 mm	Schacht Telephoto	3.3-22	4 ft.	Preset	Praktina	Edixa Camera Co.	\$85
100 mm	Topcor UV	4-22	5 ft.	Automatic	Topcon Auto 100, Unirex, IC-1	Paillard Inc.	\$84
100 mm	Travegon	3.3-22	4 ft.	Preset	Praktina	Edixa Camera Co.	\$80
100 mm	Vivitar Auto	2.8-22	4 ft.	Automatic	Canon, Konica, Minolta, Nikon	Ponder & Best, Inc.	\$99.50-\$109.50
105 mm	Auto-Nikkor IC	2.5-22	3 ft. 4 in.	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPD	\$289.50
105 mm	Belows Nikkor	4-32	Short mount for bellows use	Preset	All models Nikon, Nikkormat	Nikon Inc., sub. EPD	\$216
105 mm	Caspeco	2.8-16	5 ft.	Preset	"T" system	Edixa Camera Co.	\$49.50
105 mm	Exakta	2.8-22	3 ft.	Preset	Exakta, Exa	Exakta Camera Co.	\$41.50
105 mm	Mamiya/Sekor Auto EX	2.8-16	5 ft.	Automatic	Mamiya/Sekor Auto XTL, Auto X1000	Bell & Howell/Mamiya Co.	\$169.50
105 mm	Mamiya/Sekor Auto SX	2.8-16	5 ft.	Automatic	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$159.50
105 mm	Miranda Auto	2.8-22	42 in.	Automatic	Miranda	AIC Photo Inc.	\$159.95
105 mm	Miranda EC	2.8-22	3 ft. 11 in.	Automatic	Miranda EE, dx3, RE II	AIC Photo Inc.	\$164.95
105 mm	Miranda Auto "E"	2.8-16	4 ft.	Automatic	Miranda Auto Sensorex EE	AIC Photo Inc.	\$164.95
105 mm	Novoflex Noflexar	3.5-22	Short mount for bellows use	Automatic	Most bellows, via Novoflex adapters	Burleigh Brooks Optics, Inc.	\$160
105 mm	Novoflex Noflexar	3.5-22	Short mount for bellows use	Manual	Most bellows attachments via Novoflex adapters	Burleigh Brooks Optics, Inc.	\$81
105 mm	Soligor Auto	2.8-16	4 ft.	Automatic	Miranda Sensorex, Sensomat	AIC Photo Inc.	\$139.95
105 mm	Soligor Auto	2.8-16	4 ft.	Automatic	Miranda Sensorex EE	AIC Photo Inc.	\$144.95
105 mm	Soligor Auto T4	2.8-22	5 ft.	Automatic	"T-4" system	AIC Photo Inc.	\$114.50
105 mm	Super-Multi-Coated Takumar	2.8-22	4 ft.	Automatic	Pentax H1a, H3v, SL, SP 500, Spotmatic I, II, IIa, ES, F, ES II	Honeywell Photographic Prods.	\$194.50
105 mm	Tamron Adaptall	2.5-22	51.2 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rolle SL	Berkey Marketing	\$159.95
105 mm	Tele-Astranar	2.8-22	4 ft.	Preset	Petri, Pentax screw-in mounts, most popular SLRs using T mounts	Sterling Howard Corp.	\$37.75
115 mm	Pro-Tessar	4-22	10 ft.	Automatic	Contarex	H.P. Marketing Corp.	\$249
115 mm	Tessar	3.5-22	17 1/2 in. (with bellows)	Preset	Contarex	H.P. Marketing Corp.	\$510
120 mm	Biometar	2.8-22	4 1/2 ft.	Automatic	Exa, Exakta	Exakta Camera Co.	\$150
120 mm	Super-Multi-Coated Takumar	2.8-22	3 ft.	Automatic	Pentax H1a, H3v, SL, SP 500, Spotmatic I, II, IIa, ES, F, ES II	Honeywell Photographic Prods.	\$209.50
125 mm	Tachar	2.3-22	6 ft.	Manual	Most 35-mm SLRs via adapter	Ercona Corp.	\$950
135 mm	Alpa-Takumar	3.5-22	5 ft.	Automatic	All Alpas	Karl Heitz Inc.	\$299.50
135 mm	Alcor	2.8-22	8 ft.	Automatic	Canon FTb, Konica EE, Minolta, Nikon, Pentax	Alco Photo Supply Corp.	On request
135 mm	Alpex Auto	2.8-22	6 ft.	Automatic	Canon, FD, Minolta, Nikon, Pentax	AIC Photo Inc.	On request
135 mm	Asanuma Automatic	2.8-22	6 ft.	Automatic	Minolta, Nikon, Pentax, Canon FTb, Konica FTA, Olympus OM-1	Asanuma Corp.	\$100-\$130
135 mm	Auto-Nikkor	3.5-32	5 ft.	Automatic	All Nikon, Nikkormat	Nikon Inc., sub. EPD	\$199.50

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIAPHRAGM	FITS CAMERAS	SUPPLIER	PRICE
135-mm	Auto-Nikkor IC	2.8-22	5 ft	Automatic	All Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$287
135-mm	Auto Rokunar	1.8-16	6 ft	Automatic	Canon, Konica, Minolta, Miranda, Nikon, Pentax, ES; Olympus OM-1	Aetna Optix, Inc.	\$169.50; \$179.50
135-mm	Auto Rokunar	2.8-22	6 ft	Automatic	Canon SLR, Minolta SRs, Nikon, Pentax	Aetna Optix, Inc.	\$99.50
135-mm	Auto Tele-Astranar	2.8-22	8 ft	Automatic	Canon, Konica Auto, Minolta, Nikon, Pentax	Sterling Howard Corp.	\$53.50
135-mm	Auto Topcor	3.5-22	5 ft	Automatic	Topcon Super D, OM	Paillard Inc.	\$152.75
135-mm	Auto Yashikor	2.8-22	4.5 ft	Automatic	Yashica	Yashica Inc.	\$100
135-mm	Auto-Yashinon/OS-M	2.8-22	5 ft	Automatic	With Praktica thread; Yashica Js and TLs	Yashica Inc.	\$170
135-mm	Bushnell	2.8-22	6 ft	Automatic	Canon FT, FTb, TL, Pellix, Konica, Mamiya/Sekor, Minolta SR, SR-T, Nikkormat, Nikon F, Pentax F, Praktica, Olympus OM-1	Bushnell Optical Co.	\$21.50; \$131.50
135-mm	Canon FD SC	2.5-22	5 ft	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$259
135-mm	Canon FD SC	3.5-22	5 ft	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$185
135-mm	Caspeco	2.5-22	6 ft	Preset	"T" system	Edixa Camera Co.	\$64.50
135-mm	Caspeco	2.8-16	8 ft	Preset	"T" system	Edixa Camera Co.	\$52.50
135-mm	Caspeco	3.5-22	5 1/2 ft	Automatic	"T" system	Edixa Camera Co.	\$80
135-mm	Caspeco	3.5-22	6 ft	Preset	"T" system	Edixa Camera Co.	\$45
135-mm	Caspeco	2.8-22	6 ft	Automatic	Exakta	Exakta Camera Co.	\$80
135-mm	Caspeco	2.8-22	6 ft	Automatic	Exakta, Pentax, Nikon, Miranda, Canon	Exakta Camera Co.	\$85.120
135-mm	Caspeco Automatic	2.8-22	6 ft	Automatic	Canon SLR, Exakta, Minolta, Nikon, Pentax, Edixa	Edixa Camera Co.	\$80
135-mm	Caspeco Automatic	3.5-22	6 ft	Automatic	Canon SLR, Exakta, Minolta, Nikon, Pentax, Edixa	Edixa Camera Co.	\$75
135-mm	Caspeco Insta-Switch Automatic	3.5-22	5 ft	Automatic	"Insta-Switch" system for most SLR 35s	Edixa Camera Co.	\$80
135-mm	Caspeco Short Barrel	3.5-22		Manual	For use with bellows only	Edixa Camera Co.	\$30
135-mm	EBC Fujinon	2.5-22	5 ft	Automatic	Fujica ST-701, 801, 901; Pentax, Praktica mounts	Fuji Photo Film USA Inc.	\$225
135-mm	E. Zuiko Auto-T	2.8-22	4 ft, 10% in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$249.95
135-mm	E. Zuiko Auto-T	3.5-22	4 ft, 10% in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$189.95
135-mm	EBC Fujinon	3.5-22	5 ft	Automatic	Fujica ST-701, ST-801, ST-901; Pentax, Praktica	Fuji Photo Film U.S.A., Inc.	\$180
135-mm	Elmarit	2.8-32	5 ft	Click-stop	Visoflex II, III housings; Leicaflex, Leicaflex SL and SL2 with adapters	E. Leitz, Inc.	\$399
135-mm	Elmarit (head only)	2.8-32	5 ft	Click-stop	Visoflex II, III housings; Leicaflex, Leicaflex SL and SL2 with adapters	E. Leitz, Inc.	\$234
135-mm	Elmarit-R	2.8-22	5 ft	Automatic	Leicaflex, Leicaflex SL, SL2	E. Leitz, Inc.	\$375
135-mm	Exakta	2.5-22	5 ft	Preset	Exakta, Exa	Exakta Camera Co.	\$53.50
135-mm	Exakta	2.8-22	5 ft	Preset	Exakta, Exa	Exakta Camera Co.	\$43.50
135-mm	Exakta	3.5-22	5 ft	Preset	Exakta, Exa	Exakta Camera Co.	\$37.50
135-mm	Formula 5	2.8-22	7 ft	Automatic	Pentax, Minolta, Nikon, Canon, Konica	IMC Div., Interphoto	\$84.95, \$109.95
135-mm	Hanimex Auto	2.8-22	6 ft	Automatic	Canon SLR, Minolta, Nikon, Pentax, Praktica	Hanimex (U.S.A.) Inc.	\$124.95
135-mm	Isco	2.8-22	7 ft	Automatic	Exakta, Exa	Exakta Camera Co.	\$135
135-mm	Kalimar	2.8-22	6 ft	Automatic	Minolta, Nikon, Miranda, Exakta, Pentax, Canon	Kalimar Inc.	\$95-\$115
135-mm	Konica Hexanon AR	2.5-16	47.5 in.	Automatic EE	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000, A-3	Konica Camera Co.	\$225
135-mm	Konica Hexanon AR	3.2-16	39.4 in.	Automatic EE	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000, A-3	Konica Camera Co.	\$175
135-mm	Konica Hexar	3.5-16	59.6 in.	Automatic EE	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000, A-3	Konica Camera Co.	On request
135-mm	Mamiya/Sekor Auto SX	2.8-22	5 ft	Automatic	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$139.50
135-mm	Mamiya/Sekor EX	2.8-22	5 ft	Automatic	Mamiya/Sekor Auto XTL, Auto X1000	Bell & Howell/Mamiya Co.	\$159.50
135-mm	MC Minolta/Celnic	2.8-22	5 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$115
135-mm	MC Minolta/Celnic	3.5-22	5 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$100
135-mm	MC Rokkor-X	2.8-22	5 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$203
135-mm	MC Rokkor-X	3.5-22	5 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$152
135-mm	Meyer Primotar	3.5-22	6.2 ft	Preset	Exa II, Exakta	Exakta Camera Co.	\$49.50
135-mm	Meyer Primotar	3.5-22	6 ft	Preset	Praktica	Edixa Camera Co.	\$49.95
135-mm	Miida	2.8-22	6 ft	Automatic	Canon, Konica, Minolta, Nikon, Pentax mounts	Miida Photo	\$114.50-\$130
135-mm	Miranda Auto	2.8-22	5 ft	Automatic	Miranda	AIC Photo Inc.	\$179.95
135-mm	Miranda Auto	3.5-22	5 ft	Automatic	Miranda	AIC Photo Inc.	\$127.95
135-mm	Miranda E Auto	2.8-16	5 ft	Automatic	Miranda Auto Sensorex EE	AIC Photo Inc.	\$184.95
135-mm	Miranda E Auto	3.5-16	5 ft	Automatic	Miranda Auto Sensorex EE	AIC Photo Inc.	\$134.95
135-mm	Miranda	3.5-22	(Short barrel, for use with bellows)	Preset	Miranda	AIC Photo Inc.	\$57.95
135-mm	Miranda EC	2.8-22	4 ft, 11 in.	Automatic	Minolta SR-T, Pentax	AIC Photo Inc.	\$184.95
135-mm	Novoflex Noiflexar	4.5-22		Automatic	Most bellows via Novoflex adapters	Burleigh Brooks Optics, Inc.	\$129
135-mm	Novoflex Xenar	4.5-32	Short mount for bellows use	Manual	Most bellows attachments via Novoflex adapters	Burleigh Brooks Optics, Inc.	\$150
135-mm	Olympia Sonnar	2.8-22	4 ft	Automatic	Contarex	H.P. Marketing Corp.	\$488
135-mm	Petri Auto EE	3.8-16	8 ft	Automatic	Petri FT, EE	Petri International Corp.	\$137.50
135-mm	Petri Auto	2.8-22	8 ft	Automatic	Petri FT, FT II, V6	Petri International Corp.	\$143.50
135-mm	Petri Auto	3.5-22	4 1/2 ft	Automatic	Petri FT, FT II, V6	Petri International Corp.	\$111.50
135-mm	Petri Auto	3.8-16	8 ft	Automatic	Petri FT, FT II, V6	Petri International Corp.	\$90.75
135-mm	P.R.O.	3.5-22	6 ft	Preset	"T" system	P.R.O.	\$49.95
135-mm	P.R.O. Upsilon	2.8-22	6 ft	Automatic	Minolta, Nikon, Pentax; Canon FD, Konica EE; Olympus OM-1, Pentax ES	P.R.O.	\$122.95, \$152.95
135-mm	Rikenon	2.8-22	5.9 ft	Automatic	Edixa, Pentax, Praktica, Ricoh, Yashica, Mamiya/Sekor	Braun North America	\$99.95, \$124.95
135-mm	Samigon Automatic	2.8-22	6 ft	Automatic	Canon F-1, FTb, Minolta SR-T 101, Nikon, Pentax	Samigon Div./Agraph	\$89-\$110
135-mm	Schacht Travenar	3.5-22	4 1/2 ft	Automatic	Edixa, Pentax	Edixa Camera Co.	\$79.95
135-mm	Schneider Isco	2.8-22	6 ft	Automatic	Exakta	Exakta Camera Co.	\$135
135-mm	Schneider Tele-Xenar	3.5-22	6 1/2 ft	Automatic	Edixa, Pentax	Edixa Camera Co.	\$99.50
135-mm	Schneider Tele-Xenar	4-32	8 1/2 ft	Manual	Robot Royal, Recorder, Motor Recorder 24 and 18	Karl Heitz, Inc.	\$439
135-mm	SL Tele-Xenar	3.5-22	5 1/2 ft	Automatic	Rollei SL 35	Rollei of America, Inc.	\$180
135-mm	Soligor	1.8-22	7 ft	Preset	"T-2" system	AIC Photo Inc.	\$299.50
135-mm	Soligor	2.8-22	5 ft	Preset	"T-2" system	AIC Photo Inc.	\$116.95
135-mm	Soligor C/D	2-16	5.9 ft	Automatic	Canon FD, Konica T and A, Minolta, Nikon, Pentax	AIC Photo Inc.	\$279.50
135-mm	Soligor Auto	2.8-22	6 ft	Automatic	Minolta SR-T, Pentax	AIC Photo Inc.	\$137.50
135-mm	Soligor Auto	2.8-22	6 ft	Automatic	Canon FD, Konica Autoreflex T, A, Miranda, Nikon F, Miranda EE	AIC Photo Inc.	\$147.50; \$124.50
135-mm	Soligor Auto	3.5-22	6 ft	Automatic	Canon, Minolta SR, Miranda, Nikon F, Pentax; Miranda EE	AIC Photo Inc.	\$117.50; \$124.50
135-mm	Soligor Auto T4	2.8-22	6 ft	Automatic	"T-4" system	AIC Photo Inc.	\$119.50
135-mm	Soligor Auto T4	3.5-22	6 ft	Automatic	"T-4" system	AIC Photo Inc.	\$99.50
135-mm	Sonnar	4-22	4 ft	Automatic	Exakta, Exa	Exakta Camera Co.	\$99.50
135-mm	Sonnar	4-22	4 ft	Automatic	Contarex	H.P. Marketing Corp.	\$359
135-mm	Spiratone Auto	1.8-16	6 ft	Automatic	Argus/Cosine, Canon FT, FX, TL, Exakta, Fujica, Mamiya/Sekor, Minolta, Miranda, Nikkormat, Nikon, Pentax, Petri, Praktica, Ricoh TLS, Yashica, Canon F-1, FTb, TLb, Pentax ES, F	Spiratone, Inc.	\$134.95; latter six, \$144.95
135-mm	Spiratone Plura-Coat	2.8-16	5 1/2 ft	Automatic	Minolta SR-T 101, Nikkormat, Nikon, Pentax group; Canon F-1, FTb, TLb, Konica Autoreflex	Spiratone, Inc.	\$59.95; latter four, \$74.95

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
135-mm	Steinheil	4.5-22	4.7 ft	Preset	Praktina	Edixa Camera Co.	\$43.95
135-mm	Suntar	2.8-22	6 ft	Automatic	Pentax	IMC Div., Interphoto	\$69.95
135-mm	Super Dynarex	4-22	5 ft	Automatic	Icarex BM	H.P. Marketing Corp.	\$159
135-mm	Super-Multi-Coated Takumar	2.5-22	5 ft	Automatic	Honeywell Pentax H1a, H3v, SP 500, SL, Spotmatic I, II, IIa, ES, ES II, F	Honeywell Photographic Prods.	\$239.50
135-mm	Super-Multi-Coated Takumar	3.5-22	5 ft	Automatic	Honeywell Pentax H1a, H3v, SP 500, SL, Spotmatic I, II, IIa, ES, ES II, F	Honeywell Photographic Prods.	\$179.50
135-mm	Tamron	2.8-22	59 in.	Automatic	Canon F-1, FTb, FTbN, TLb, EF, FP, FT, FX, Pellix, Minolta, Nikon, Nikkormat, Pentax	Berkey Marketing	\$119.95
135-mm	Tamron	2.8-16	59 in.	Automatic	Konica EE	Berkey Marketing	\$119.95
135-mm	Tamron Adaptall	2.8-22	4½ ft	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$129.95
135-mm	Tele-Astranar	2.8-22	6 ft	Preset	Petri, Praktica screw-in mounts, most SLRs using T mounts	Sterling Howard Corp.	\$34.50
135-mm	Tele-Astranar	3.5-22	7 ft	Preset	Petri, Praktica screw-in mounts, most SLRs using T mounts	Sterling Howard Corp.	\$24.95
135-mm	Tele-Elmar (head only)	4-22	3 ft, 3 in.	Click-stop	Visoflex II & III housings; Leicaflex, Leicaflex SL and SL2 with adapters	E. Leitz, Inc.	\$297
135-mm	Tele-Elmar	4-22	5 ft	Click-stop	Leica M1, M2, M3, M4, M5	E. Leitz, Inc.	\$399
135-mm	Tele-Iscaron	2.8-22	4.7 ft	Automatic	Exa II, Exakta	Exakta Camera Co.	\$135
135-mm	Tele-Iscaron	2.8-22	4.7 ft	Preset	Exa II, Exakta	Exakta Camera Co.	\$90
135-mm	Topcor UV	4-22	6 ft	Automatic	Topcon Auto-100, Unirex, IC-1	Paillard Inc.	\$117.20
135-mm	Vivitar	2.8-22	6 ft	Preset	"T" system	Ponder & Best, Inc.	\$68.50
135-mm	Vivitar Auto	2.8-22	4½ ft	Automatic	Vivitar-Universal thread, Canon, Nikon, Minolta, Konica, Olympus OM-1	Ponder & Best, Inc.	\$119.50
135-mm	Vivitar Auto T-4 Telephoto	2.8-22	4 ft, 6 in.	Automatic	Vivitar-Universal thread, Canon, Minolta, Nikon, Konica, Olympus OM	Ponder & Best, Inc.	\$119.50
135-mm	Vivitar Auto-TX	2.5-16	6 ft, 6 in.	Automatic	TX System for Vivitar-Universal thread, Minolta, Nikon, Canon, Konica, Olympus OM, Pentax ES/F, Mamiya/Sekor SX	Ponder & Best, Inc.	\$129.50
135-mm	Vivitar Series 1	2.3-22	3 ft	Automatic	Universal thread, Canon, Konica Autoreflex, Minolta, Nikon	Ponder & Best, Inc.	\$219.50
150-mm	Alpa-Kinoptik	2.8-32	5.3 ft	Automatic	Alpa	Karl Heitz, Inc.	\$899.50
150-mm	Meyer Tele-Magor	5.5-22	8.2 ft	Preset	Exa II, Exakta	Exakta Camera Co.	\$49.50
150-mm	Schneider Tele-Xenar	4-32	12 ft	Manual	Robor Star 25, 50, 90, Junior, Star I, LW	Karl Heitz, Inc.	\$399
150-mm	Super-Multi-Coated Takumar	4-22	6 ft	Automatic	Honeywell Pentax H1a, H3, H3v, SP 500, Spotmatic, SL, II, IIa, ES, F, ES II	Honeywell Photographic Prods.	\$209.50
150-mm	Tachar	1.8-22	6 ft	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$1,390
150-mm	Tachar	2.3-22	6 ft	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$1,190
180-mm	Alpa Altar	4.5-32	8 ft	Automatic	Alpa	Karl Heitz, Inc.	\$499.50
180-mm	Auto Nikkor	2.8-32	6 ft	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPDI	\$599.50
180-mm	Caspeco	3.5-22	8 ft	Preset	"T" system	Edixa Camera Co.	\$58
180-mm	Elmarit-R	2.8-16	6 ft, 8 in.	Automatic	Leicaflex, Leicaflex SL, SL 2	E. Leitz, Inc.	\$792
180-mm	Exakta	3.5-22	8 ft	Preset	Exakta, Exa II	Exakta Camera Co.	\$48
180-mm	Hugo Meyer	3.5-22	8 ft	Preset	Exakta, Exa II	Exakta Camera Co.	\$79.50
180-mm	Meyer	3.5-22	7½ ft	Preset	Exakta	Exakta Camera Co.	\$80
180-mm	Meyer Primotar	3.5-22	7½ ft	Preset	Exa II, Exakta	Exakta Camera Co.	\$79.95
180-mm	Meyer Tele-Magor	5.5-22	10 ft	Preset	Praktina	Edixa Camera Co.	\$79.95
180-mm	Miranda Auto	3.5-16	7 ft, 6 in.	Automatic	Miranda	AIC Photo Inc.	\$169.95
180-mm	Olympia Sonnar	2.8-22	6 ft	Automatic	Contarex	H.P. Marketing Corp.	\$798
180-mm	Schneider Isco	2.8-22	7½ ft	Preset	Exakta	Exakta Camera Co.	\$160
180-mm	Sonnar	2.8-22	9 ft	Automatic	Edixa, Pentax	Edixa Camera Co.	\$249.50
180-mm	Sonnar	2.8-22	7 ft	Automatic	Exakta, Exa II	Edixa Camera Co.	\$249.50
180-mm	Tele-Iscaron	2.8-22	5.9 ft	Preset	Exa II, Exakta models	Exakta Camera Co.	\$200
180-mm	Zoomatar	1.3-22	23 ft	Manual	Most SLRs via adapters	Zoomar Inc.	\$2,300
200-mm	Alcor	3.5-22	12 ft	Automatic	Canon FTb, Konica EE, Minolta, Nikon, Pentax	Alco Photo Supply Corp.	On request
200-mm	Alpex Auto	3.5-22	11 ft	Automatic	Canon FD, Minolta, Nikon, Pentax	AIC Photo Inc.	On request
200-mm	Asanuma	3.5-22	12 ft	Automatic	Pentax	Asanuma Corp.	\$120
200-mm	Asanuma	3.5-22	9 ft	Automatic	Pentax, Minolta, Nikon, Konica FTA, Canon FTb, Olympus OM-1	Asanuma Corp.	\$140-\$160
200-mm	Auto-Nikkor IC	4-22	7 ft	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPDI	\$299.50
200-mm	Auto Rokunar	3.5-22	10 ft	Automatic	Canon SLR, Konica Autoreflex, Minolta SRs, Nikon, Pentax	Aetna Optix, Inc.	\$119.50
200-mm	Auto Tele-Astranar	3.5-16	8 ft	Automatic	Canon, Konica Auto, Minolta, Nikon, Pentax	Sterling Howard Corp.	\$74.50
200-mm	Auto Topcor	5.6-32	10 ft	Automatic	Topcon Super D, DM	Paillard Inc.	\$205.20
200-mm	Auto Yashikor	3.5-22	8 ft	Automatic	All SLRs with screw mounts	Yashica Inc.	\$120
200-mm	Auto-Yashinon/OS-M	4-22	8 ft	Automatic	With Praktica thread; Yashica J's and TL's	Yashica Inc.	\$220
200-mm	Bushnell	3.5-22	7 ft	Automatic	Canon FT, TL, Pellix, Mamiya/Sekor, Minolta SR, SRT, Nikkormat, Nikon F, Pentax, Praktica	Bushnell Optical Co.	\$142.50
200-mm	Bushnell	3.5-22	7 ft	Automatic	Canon FTb, Konica	Bushnell Optical Co.	\$152.50
200-mm	Canon FD SSC	2.8-22	6 ft	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$490
200-mm	Canon FD SSC	4-22	8 ft	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$268
200-mm	Caspeco	3.5-22	7 ft	Automatic	Exakta, Pentax, Nikon, Minolta, Canon	Exakta Camera Co.	\$115-\$140
200-mm	Caspeco	4.5-22	7 ft	Automatic	Exakta	Exakta Camera Co.	\$135
200-mm	Caspeco	4.5-22	10 ft	Preset	"T" system	Edixa Camera Co.	\$54.50
200-mm	Caspeco Automatic	3.5-22	10 ft	Automatic	Canon SLR, Exakta, Minolta, Nikon, Pentax mounts	Edixa Camera Co.	\$110
200-mm	EBC Fujinon	4.5-22	8 ft, 2.4 in.	Automatic	Fujica ST-701, ST-801, ST-901, Pentax, Praktica	Fuji Photo Film U.S.A., Inc.	\$220
200-mm	E. Zuiko Auto-T	4-32	about 99 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$269.95
200-mm	Exakta	4.5-22	9 ft	Preset	Exakta, Exa II	Edixa Camera Co.	\$45
200-mm	F. Zuiko Auto-T	5-32	about 99 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$239.95
200-mm	Formula 5	3.5-22	10 ft	Automatic	Pentax, Minolta, Nikon, Canon, Konica	IMC Div., Interphoto Corp.	\$109.95
200-mm	Hanimex Auto	3.5-22	10 ft	Automatic	Canon SLR, Konica, Minolta, Nikon, Pentax/Praktica	Hanimex (U.S.A.) Inc.	\$154.95
200-mm	Kalimar	3.5-22	10 ft	Automatic	Compatible with "T" system	Kalimar Inc.	\$115-\$140
200-mm	Konica Hexanon AR	3.5-16	8.2 ft	Automatic EE	Konica Auto Helix, Autoreflex A, T, T-3, A-1000, A3	Konica Camera Co.	\$280
200-mm	Konica Hexar	4-16	8.2 ft	Automatic	Konica Autoreflex, Autoreflex A, T, T3, A1000, A3	Konica Camera Co.	On request
200-mm	Mamiya/Sekor Auto EX	3.5-22	7½ ft	Automatic	Mamiya/Sekor Auto XTL, X1000	Bell & Howell/Mamiya Co.	\$189.50
200-mm	Mamiya/Sekor Auto SX	3.5-22	7½ ft	Automatic	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$164.50
200-mm	MC Minolta/Celtic	4-22	8 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$135
200-mm	MC Minolta/Celtic	4.5-22	8 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$130
200-mm	MC Rokkor-X	3.5-22	8 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$274
200-mm	MC Rokkor-X	4.5-22	8 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$193
200-mm	Mida	3.5-22	8 ft	Automatic	Exakta, Canon, Minolta, Nikon, Pentax, Miranda mounts	Mida Photo	\$115-\$140
200-mm	Miranda	3.5-16	10 ft	Automatic	Miranda EE	AIC Photo Inc.	\$219.95
200-mm	Miranda Auto	3.5-22	10 ft	Automatic	Miranda	AIC Photo Inc.	\$179.95
200-mm	Miranda EC	3.5-22	8 ft, 2 in.	Automatic	Miranda EE, dx-3, RE II	AIC Photo Inc.	\$219.95
200-mm	Petri Auto	4-22	10 ft	Automatic	Petri FT, FT II, VG	Petri International Corp.	\$156.50
200-mm	Petri Auto EE	4-16	10 ft	Automatic	Petri FT EE	Petri International Corp.	\$216.75
200-mm	P.R.O.-Upsilon	2.8-22	9.2 ft	Automatic	Minolta, Nikon, Pentax, Canon FD, Konica EE, Olympus OM-1, Pentax ES	P.R.O.	\$269.95; \$279.95
200-mm	P.R.O.-Upsilon	3.5-22	8 ft, 5 in.	Automatic	Minolta, Nikon, Pentax, Canon FD, Konica EE, Olympus OM-1, Pentax ES	P.R.O.	\$135; \$165
200-mm	Proxitel	4-22	32 in.	Automatic	"YS" system	Spiratone, Inc.	\$99.95
200-mm	Rikenon	3.5-22	9.8 ft	Automatic	Edixa, Pentax, Praktica, Ricoh, Yashica, Mamiya/Sekor, Vivitar	Braun North America	\$164.95

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA- PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
200-mm	Samigon Automatic	3.5-22	8½ ft	Automatic	Canon F-1, FTb, Yashica, Mamiya/Sekor, Vivitar, Minolta SR-T 101, Nikon, Pentax	Samigon Div./Argraph	\$124; \$139.95
200-mm	Schneider Tele-Xenar	5.5-32	9 ft	Preset	Edixa, Pentax	Edixa Camera Co.	\$99.50
200-mm	Schneider Tele-Xenar	5.5-32	8½ ft	Manual	Robot Royal, Recorder, Motor Recorder 24 and 18, Star 25, 50, 90	Karl Heitz, Inc.	\$549
200-mm	Soligor Auto	3.5-22	10 ft	Automatic	Canon FB, Konica Autoreflex T, A, Miranda, Nikon F, Olympus OM-1	AIC Photo Inc.	\$173.50
200-mm	Soligor Auto T4	3.5-22	10 ft	Automatic	"T-4" system	AIC Photo Inc.	\$158.50
200-mm	Soligor C/D	2.8-22	7.2 ft	Automatic	Canon FD, Konica T and A, Minolta, Nikon, Pentax	AIC Photo Inc.	\$324.50
200-mm	Spiratone Proxixel	4-22	32 in.	Automatic	Argus/Cosina, Canon FT, FX, TL, Exakta, Mamiya/Sekor, Minolta, Miranda, Nikkormat, Nikon, Pentax, Petri, Praktica, Ricoh TLS, Yashica; Canon F-1, FTb, TLb, Konica Autoreflex, Olympus OM-1, Pentax ES	Spiratone, Inc.	\$99.95; latter six \$109.95
200-mm	Spiratone Plura-Coat	3.5-16	9 ft	Automatic	Minolta SR-T 101, Nikkormat, Nikon, Pentax group; Canon F-1, FTb, TLb, Konica Autoreflex	Spiratone, Inc.	\$89.95; latter four, \$84.95
200-mm	Super Dynarex	4-22	10 ft	Automatic	Icarex 35, BM	H.P. Marketing Corp.	\$799
200-mm	Super-Multi-Coated Takumar	4-22	8 ft	Automatic	Honeywell Pentax H1a, H3v, SP 500, Spotmatic I, II, SL, 11a, ES, F, ES II	Honeywell Photographic Prods.	\$239.50
200-mm	Tamron	3.5-16	8.9 ft	Automatic	Konica EE	Berkey Marketing	\$149.95
200-mm	Tamron	3.5-22	8.9 ft	Automatic	Canon F-1, FTb, FTb-N, TLb, EF, FP, FT, FX, Pellix, Minolta, Nikon, Nikkormat, Pentax	Berkey Marketing	\$149.95
200-mm	Tamron Adaptall	3.5-22	74 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$199.95
200-mm	Tele-Astronar	4.5-22	12 ft	Preset	Petri, Praktica screw-in mounts, most popular SLRs using T mounts	Sterling Howard Corp.	\$36.95
200-mm	Telestan	3.5-22	6 ft	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$990
200-mm	Telyt	4-22	10 ft	Click-stop	Visoflex II & III housings; Leicaflex, Leicaflex SL and SL2 with adapters	E. Leitz, Inc.	\$588
200-mm	Topcor UV	4-22	19.7 ft	Automatic	Topcor Auto 100, Unirex, IC-1	Paillard Inc.	\$165.70
200-mm	Vivitar	3.5-22	12 ft	Preset	"T" system	Ponder & Best, Inc.	\$99.50
200-mm	Vivitar Auto	3.5-22	6 ft	Automatic	Vivitar-Universal thread, Minolta, Canon, Nikon, Konica, Olympus OM	Ponder & Best, Inc.	\$144.50; \$154.50
200-mm	Vivitar Auto-TX	3.5-22	8 ft, 5 in.	Automatic	TX System	Ponder & Best, Inc.	\$159.50
200-mm	Vivitar Series I	3-22	4 ft	Automatic	Vivitar-Universal thread, Minolta, Nikon, Canon	Ponder & Best, Inc.	\$249.50
200-mm	Zeiss Tele-Tessar	4-32	8½ ft	Automatic	Rolleiflex SL 35	Rollei of America, Inc.	\$243
210-mm	Alpa Kinoptik	2.8-22	15 ft	Manual	Alpa	Karl Heitz, Inc.	\$849.50
210-mm	Kinoptik	2.8-22	4½ ft	Manual	Robot Royal, Recorder, Motor Recorder 24, and 18	Karl Heitz, Inc.	\$849.50
250-mm	Caspeco "T" Mount	4.5-22	10 ft	Preset	"T" system	Edixa Camera Co.	\$57.50
250-mm	Meyer Tele-Magor	5.5-22	11 ft	Preset	Exa II, Exakta	Exakta Camera Co.	\$79.50
250-mm	Olympia Sonnar	4-22	98 in.	Automatic	Contarax	H.P. Marketing Corp.	\$895
250-mm	Piesker	4.5-22	24 ft	Preset	Nikon	Edixa Camera Co.	\$75
250-mm	Piesker	5.5-22	10 ft	Preset	Edixa, Pentax, Praktica, Yashica	Edixa Camera Co.	\$80
250-mm	Soligor Auto T-4	4.5-22	15 ft	Automatic	"T-4" system	AIC Photo Inc.	\$154.50
250-mm	Telyt R	4-22	15 ft	Automatic	Leicaflex, Leicaflex SL, SL2	E. Leitz, Inc.	\$521
280-mm	Noxoflex Follow Focus	5.6-32	3 ft with special bellows	Manual	Most SLRs via adapters	Burleigh Brooks Optics, Inc.	\$605
280-mm	Telyt	4.8-22	11 ft, 8 in.	Click-stop	Visoflex II, III, Leicaflex SL, SL2 with adapters	E. Leitz, Inc.	\$396
280-mm	Telyt (head only)	4.8-22	6 ft, 8 in.	Click-stop	Leica M1, M2, M3, M4 with Televit focusing device	E. Leitz, Inc.	\$297
300-mm	Alpa Kinoptik	3.5-22	18 ft	Manual	Alpa	Karl Heitz, Inc.	\$849.50
300-mm	Alpa Pan-Tele-Kilar	4-32	5½ ft	Manual	Alpa	Karl Heitz, Inc.	\$799.50
300-mm	Alpex Auto	5.5-22	20 ft	Automatic	Canon FD, Minolta, Nikon, Pentax	AIC Photo Inc.	On request
300-mm	Asanuma Automatic	5.5-22	20 ft	Automatic	Minolta, Nikon, Pentax; Canon, Olympus OM-1	Asanuma Corp.	\$160; \$170
300-mm	Auto-Nikkor	4.5-22	13 ft	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$412
300-mm	Auto Rokunar	5.5-22	12 ft	Automatic	Canon, Minolta, Nikon, Pentax	Aetna Optix, Inc.	\$139.50
300-mm	Auto Tele-Astronar	5.5-22	12 ft	Automatic	Canon, Konica Auto, Minolta, Nikon, Pentax	Sterling Howard Corp.	\$84.50
300-mm	Auto Topcor	5.6-22	15 ft	Automatic	Topcon Super D, DM	Paillard Inc.	\$299.25
300-mm	Auto-Yashimon/DX	5.6-22	15 ft	Automatic	With Praktica thread, Yashica J's, TL's	Yashica Inc.	Under \$215
300-mm	Bushnell	5.5-22	20 ft	Automatic	Canon FT, TL, Pellix, Mamiya/Sekor, Minolta SR, SRT, Nikkormat, Nikon F, Pentax, Praktica	Bushnell Optical Co.	\$162.50
300-mm	Canon FD SC	5.6-22	13 ft	Automatic	Canon F-1, FTb, TLb, EF, TX	Canon USA, Inc.	\$399
300-mm	Canon FL SSC	2.8-32	12 ft	Manual	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$2,577
300-mm	Canon FL Fluorite	5.6-22	13 ft	Manual	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$680
300-mm	Caspeco	5.5-22	25 ft	Preset	Exakta, Pentax, Nikon, Minolta, Canon	Edixa Camera Co.	\$150-\$180
300-mm	Caspeco Automatic	5.5-22	25 ft	Automatic	Canon SLR, Exakta, Minolta, Nikon, Pentax mounts	Edixa Camera Co.	\$125
300-mm	F. Zeiss Auto-T	4.5-32	11½ ft	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$429.95
300-mm	Ferr	5-22	6 ft	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$790
300-mm	Formula 5	5-22	15 ft	Automatic	Pentax, Nikon, Minolta	IMC Div./Interphoto Corp.	\$139.95-\$149.95
300-mm	Kalimar	5.5-22	20 ft	Automatic	Exakta, Pentax, Canon, Miranda, Minolta, Nikon	Kalimar Inc.	\$160-\$190
300-mm	Kinoptik	3.5-32	20 ft	Manual	Robot Royal, Recorder, Motor Recorder 24, and 18	Karl Heitz, Inc.	\$849.50
300-mm	Konica Hexanon AR	4.5-16	13.5 ft	Automatic EE	Konica Autoreflex, T, W, T-3, A-1000, A3	Konica Camera Co.	\$419
300-mm	Konica Hexanon AR Fluorite	6.3-22	14.8 ft	Automatic EE	Konica Autoreflex, T, W, T-3, A-1000, A3	Konica Camera Co.	\$1,100
300-mm	MC Rokkor-X	4.5-22	15 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$370
300-mm	MC Rokkor-X	5.6-22	15 ft	Automatic	All Minolta SLRs	Minolta Corp.	\$305
300-mm	Meyer Tele-Magor	4.5-22	11 ft	Preset	Exa II, Exakta	Exakta Camera Co.	\$120
300-mm	Mida	4.5-22	17 ft	Automatic	Canon, Minolta, Nikon, Pentax mounts	Mida Photo	\$205-\$220
300-mm	Miranda	5.6-22	19 ft	Automatic	Miranda Dual	AIC Photo Inc.	\$207.95
300-mm	Pan-Tele-Kilar (Panol)	4-32	5½ ft	Preset	Most SLRs, via adapters	Zoomar, Inc.	\$454
300-mm	Pan-Tele-Kilar (Pansu)	4-32	4½ ft	Preset	Most SLRs, via adapters	Zoomar, Inc.	\$652
300-mm	Petri	5.5-32	25 ft	Preset	Petri	Petri International Corp.	\$184.25
300-mm	Petri Auto	5-22	18 ft	Automatic	Petri FT, FT II, V6	Petri International Corp.	\$289
300-mm	P.R.O.-Upsilon	4-22	18.5 ft	Automatic	Minolta, Nikon, Pentax; Canon FD, Konica EE, Olympus OM-1, Pentax ES	P.R.O.	\$249.95; \$269.95
300-mm	Rikenon	5.5-22	19.7 ft	Automatic	Edixa, Pentax, Praktica, Ricoh, Yashica, Mamiya/Sekor, Vivitar	Braun North America	\$169.95
300-mm	Samigon	4.5-22	22 ft	Automatic	Canon F-1, FTb, Minolta SR-T series, Nikon, Pentax	Samigon Div./Argraph Corp.	\$173-\$185
300-mm	Schneider Tele-Xenar	5-32	15 ft	Manual	Robot Royal, Recorder, Motor Recorder 24 and 18, Star 25, 50, 90	Karl Heitz, Inc.	\$549.50
300-mm	Soligor Auto	5.5-22	20 ft	Automatic	Minolta SR, Miranda, Nikon, Pentax, Olympus OM-1	AIC Photo Inc.	\$182.50
300-mm	Soligor Auto T4	5.5-22	20 ft	Automatic	"T-4" system	AIC Photo Inc.	\$174.50
300-mm	Spiratone Auto	4-22	15 ft	Automatic	Argus/Cosina, Canon FT, FX, TL, Exakta, Fujica, Mamiya/Sekor, Minolta, Miranda, Nikkormat, Nikon, Pentax, Petri, Praktica, Ricoh TLS, Yashica; Canon F-1, FTb, TLb, Konica Autoreflex, Olympus OM-1, Pentax ES	Spiratone, Inc.	\$134.95; latter six \$144.95
300-mm	Spiratone Plura-Coat	5.5-22	12 ft	Automatic	Pentax, Praktica, Yashica, Exakta, Minolta SR-T, Miranda, (except EE), Nikon, Nikkormat, Canon F-1 and FTb, Konica Autoreflex, Olympus OM-1	Spiratone, Inc.	\$79.95; \$94.95
300-mm	Steinheil	4.5-22	12 ft	Preset	Pratime	Edixa Camera Co.	\$199.50
300-mm	Super-Multi-Coated Takumar	4-22	18 ft	Automatic	Honeywell Pentax H1a, H3v, SP 500, Spotmatic I, II, SL, 11a, ES, F, ES II	Honeywell Photographic Prods.	\$429.50

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
300-mm	Tamron Adaptall	5.6-22	94 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$219.50
300-mm	Telastan	3.5-22	6 ft.	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$1.190
300-mm	Tele-Athenar	3.2-22	25 ft.	Manual	Most 35-mm SLRs via T2 adapter	Century Precision Optics	\$499.50
300-mm	Tele-Athenar	4.5-22	25 ft.	Manual	Most 35-mm SLRs via T2 adapter	Century Precision Optics	\$289.50
300-mm	Topcor	2.8-22	15 ft.	Preset	Topcon Super D, DM	Paillard Inc.	\$904.40
300-mm	Topcor	5.6-22	15 ft.	Preset	Topcon Super D, DM	Paillard Inc.	\$269.25
300-mm	Vivitar	5.6-22	15 ft.	Preset	"T" system	Ponder & Best, Inc.	\$104.50
300-mm	Vivitar Auto	5.6-22	19 ft, 6 in.	Automatic	Canon, Nikon, Konica, Minolta, Vivitar-Universal thread	Ponder & Best, Inc.	\$189.50
300-mm	Vivitar Auto-TX	5.6-22	19 ft, 6 in.	Automatic	TX system	Ponder & Best, Inc.	\$174.95
350-mm	Asanuma	5.5-32	16 ft.	Preset	All 35-mm SLRs	Asanuma Corp.	\$108
350-mm	Soligor	5.6-32	25 ft.	Preset	"T-2" system	AIC Photo Inc.	\$152.50
360-mm	Alpa Tele-Xenar	5.5-32	15 ft.	Manual	Alpa	Karl Heitz, Inc.	\$899.50
380-mm	Schneider Tele-Xenar	5.5-32	15 ft.	Manual	Robot Royal, Recorder, Motor Recorder 24 and 18, Star 25, 50, 90	Karl Heitz, Inc.	\$659
385-mm	Tele-Athenar	4.5-32	35 ft.	Manual	Contarex, Exakta, Leicaflex, Mamiya/Sekor, Minolta, Nikon, Pentax, and similar SLR 35s	Century Precision Optics	\$369.50
400-mm	Alpex Auto	6.3-22	40 ft.	Automatic	Canon FD, Nikon, Pentax	AIC Photo Inc.	On request
400-mm	Asanuma Automatic	6.3-22	26 ft.	Automatic	Minolta, Nikon, Pentax; Canon, Olympus OM-1	Asanuma Corp.	\$190, \$200
400-mm	Auto-Nikkor IC	5.6-32	16 ft.	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPD1	\$1,405
400-mm	Auto Rokunar	6.3-22	22 ft.	Automatic	Canon, Minolta, Nikon, Pentax	Aetna Optix Inc.	\$160
400-mm	Bushnell	6.3-22	31 ft.	Automatic	Canon FT, TL, Pellix, Mamiya/Sekor, Minolta SR, SRT, Nikkormat, Nikon F, Pentax, Praktica	Bushnell Optical Corp.	\$194.50
400-mm	Canon FL	5.6-32	15 ft.	Manual	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$535
400-mm	Caspeco	6.3-32	30 ft.	Preset	"T" system	Edixa Camera Co.	\$71
400-mm	Coligon	6.3-32	30 ft.	Preset	"T" system	Aetna Optix, Inc.	\$79.50
400-mm	EBC Fujinon	4.5-45	26 ft, 8.4 in.	Manual	Fujica ST-701, ST-801, ST-901, Pentax, Praktica	Fuji Photo Film U.S.A., Inc.	\$595
400-mm	Enna	4.5-22	13 ft.	Preset	Exakta, Exa II	Exakta Camera Co.	\$139.50
400-mm	Exakta	6.3-22	14 ft.	Preset	Exakta, Exa	Exakta Camera Co.	\$99.50
400-mm	E. Zuiko Auto-T	6.3-32	16 ft, 4 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$999.95
400-mm	Fern	5-22	12 ft.	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$990
400-mm	Konica Hexanon ARM	4.5-32	26.5 ft.	Manual	Konica Auto-Reflex, Autoreflex A, T, T-3, A-1000, A3	Konica Camera Co.	\$890
400-mm	Mamiya/Sekor Auto EX	6.3-22	20 ft.	Preset	Mamiya/Sekor Auto XTL & X1000	Bell & Howell/Mamiya Co.	\$149.50
400-mm	Meyer Tele-Megor	5.5-32	20 ft.	Preset	Exakta	Exakta Camera Co.	\$129.50
400-mm	Novoflex Follow Focus	5.6-32	6 ft, with special bellows	Manual	Most SLRs via adapters	Burleigh Brooks Optics, Inc.	\$532
400-mm	Petri	6.3-32	30 ft.	Preset	Petri	Petri International Corp.	\$199.50
400-mm	Piesker	5.5-22	27 ft.	Preset	Exakta, Nikon	Edixa Camera Co.	\$140
400-mm	P.R.O.	6.3-32	30 ft.	Preset	"T" mount	P.R.O.	\$84.95
400-mm	P.R.O.-Upsilon	5.6-22	31 ft.	Automatic	Minolta, Nikon, Pentax; Canon FD, Konica EE, Olympus OM-1, Pentax ES	P.R.O.	\$199.95, \$219.95
400-mm	Rikenon	6.3-32	29.5 ft.	Automatic	Edixa, Pentax, Praktica, Ricoh, Yashica, Mamiya/Sekor, Vivitar	Braun North America	\$274.95
400-mm	Soligor	6.3-22	30 ft.	Automatic	"T-4" system	AIC Photo Inc.	\$214.50
400-mm	Soligor Auto	6.3-22	30 ft.	Automatic	Minolta SR, Miranda, Nikon F, Olympus OM-1, Pentax	AIC Photo Inc.	\$229.50
400-mm	Spiratone	6.3-22	20 ft.	Preset	"T" system	Spiratone, Inc.	\$44.95
400-mm	Spiratone Plura-Coat	6.3-32	28 ft.	Automatic	Pentax, Mamiya, Yashica	Spiratone, Inc.	\$74.95
400-mm	Spiratone Plura-Coat	6.3-32	28 ft.	Preset	"T" system	Spiratone, Inc.	\$54.95
400-mm	Sport-Fern-Kilar	4-32	15 ft.	Preset	Most 35-mm SLRs	Zoomar, Inc.	\$708
400-mm	Super-Multi-Coated Takumar	5.6-45	27 ft.	Manual	Honeywell Pentax H1a, H3v, SL, SP 500, Spotmatic I, II, Ila, ES, F, ES II	Honeywell Photographic Prods.	\$469.50
400-mm	Tele-Nikkor	4.5-22	16 ft w/focus-ing mount	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPD1	\$912, mount, \$478
400-mm	Tele-Tessar	5.6-22	13 ft.	Automatic	Contarex	H.P. Marketing Corp.	\$999
400-mm	Tele-Astranar	6.3-22	22 ft.	Preset	Petri, Praktica screw-in mounts, most SLRs using T mounts	Sterling Howard Corp.	\$44.95
400-mm	Tele-Astranar TC	6.3-22	22 ft.	Preset	Petri, Pentax screw-in mounts, most SLRs using T mounts	Sterling Howard Corp.	\$54.95
400-mm	Telyt	6.8-32	12 ft.	Click-stop	Leicaflex, Leicaflex SL, SL 2	E. Leitz, Inc.	\$1,032
400-mm	Telyt	6.8-32	12 ft.	Click-stop	Leica M cameras using Visoflex II or III or Leicaflex, Leicaflex SL via adapters	E. Leitz, Inc.	\$1,017
400-mm	Vivitar	5.6-22	20 ft.	Preset	"T" system	Ponder & Best, Inc.	\$161.50
400-mm	Vivitar Auto-TX	5.6-22	11 ft, 5 in.	Automatic	"TX" system	Ponder & Best, Inc.	\$279.50
450-mm	Caspeco "T" Mount	6.5-22	30 ft.	Preset	"T" system	Edixa Camera Co.	\$80
450-mm	Soligor	8-45	25 ft.	Preset	"T-2" mount	AIC Photo Inc.	\$144.95
500-mm	Alps Kinoptik	5.6-45	25 ft.	Manual	Alpa	Karl Heitz, Inc.	\$899.50
500-mm	Asanuma	8-22	30 ft.	Preset	"T" system	Asanuma Corp.	\$202
500-mm	Auto Topcor	5.6-22	26 ft.	Automatic	Topcon Super D, DM	Paillard Inc.	\$887.20
500-mm	Canon FL Fluorite	5.6-22	33 ft.	Manual	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$1,077
500-mm	Caspeco	8-22	30 ft.	Preset	Edixa, Pentax, also "T" system	Edixa Camera Co.	\$132
500-mm	Exakta	8-22	30 ft.	Preset	Exakta, Exa II	Exakta Camera Co.	\$109.50
500-mm	Fern	5-22	10 ft.	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$1.190
500-mm	Kinoptik	5.6-45	25 ft.	Manual	Robot Royal, Recorder, Motor Recorder 24 and 18	Karl Heitz, Inc.	\$899.50
500-mm	Super-Multi-Coated Takumar	4.5-45	33 ft.	Manual	Honeywell Pentax H1a, H3v, SP 500, Spotmatic I, II, SL, Ila, ES, F, ES II	Honeywell Photographic Prods.	\$739.50
500-mm	Telastan	4.5-22	28 ft.	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$1.595
500-mm	Tele-Astranar	8-32	40 ft.	Preset	Petri, Pentax screw-in mount, most SLRs using T mounts	Sterling Howard Corp.	\$54.95
500-mm	Tele-Athenar	4-45	50 ft.	Manual	Most 35-mm SLRs via a T2 adapter	Century Precision Optics	\$889
500-mm	Tele-Athenar	4.5-32	50 ft.	Manual	Contarex, Exakta, Leicaflex, Mamiya/Sekor, Minolta, Nikon, Pentax	Century Precision Optics	\$694.50 (latter four \$794.50)
500-mm	Tele-Athenar	5.6-32	50 ft.	Manual	Contarex, Exakta, Leicaflex, Mamiya/Sekor, Minolta, Nikon, Pentax	Century Precision Optics	\$389.50, latter four, \$489.50
500-mm	Vivitar	6.3-32	30 ft.	Preset	"T" system	Ponder & Best, Inc.	\$179.50
560-mm	Telyt	6.8-32	21 ft.	Click-stop	Visoflex II, III housings	E. Leitz, Inc.	\$1,188
560-mm	Telyt-R	6.8-32	21 ft.	Click-stop	Leicaflex SL, SL 2, SL/MOT, SL 2/MOT	E. Leitz, Inc.	\$1,317
600-mm	Alpa Tele-Kilar	5.6-45	33 ft.	Manual	Alpa	Karl Heitz, Inc.	\$999.50
600-mm	Asanuma	8-32	42 ft.	Preset	"T" system	Asanuma Corp.	\$288
600-mm	Canon FL	5.6-32	35 ft.	Manual	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$935
600-mm	Caspeco	8-32	30 ft.	Preset	"T" system	Edixa Camera Co.	\$182
600-mm	EBC Fujinon	5.6-45	41 ft, 8.4 in.	Manual	Fujica ST-701, ST-801, ST-901, Pentax, Praktica	Fuji Photo Film U.S.A., Inc.	\$795
600-mm	Enna	5.6-22	20 ft.	Preset	Exakta, Exa II	Exakta Camera Co.	\$234
600-mm	Exakta	8-22	20 ft.	Preset	Exakta, Exa II	Exakta Camera Co.	\$150
600-mm	F. Zuiko Auto-T	6.5-32	36 ft, 1 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$1,195
600-mm	Mamiya/Sekor	8-32	33 ft.	Preset	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$449.50
600-mm	Mamiya/Sekor Auto EX	8-32	33 ft.	Preset	Mamiya/Sekor Auto XTL & X1000	Bell & Howell/Mamiya Co.	\$289.50
600-mm	Novoflex Follow Focus	8-32	13 ft, w/bellows	Manual	Most SLRs via adapters	Burleigh Brooks Optics, Inc.	\$639
600-mm	Soligor	8-32	38 ft.	Preset	"T-2" system	AIC Photo Inc.	\$334.95
600-mm	Sport-Fern-Kilar	5.6-45	35 ft.	Preset	Most SLRs via adapters	Zoomar, Inc.	\$890

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
800-mm	Super-Multi-Coated Takumar	4-45	39.3 ft	Manual	Pentax	Honeywell Photographic Prods.	\$1,700
800-mm	Tele-Astranar	8-32	48 ft	Preset	Petri, Pentax screw-in mounts, most SLRs using T mounts	Sterling Howard Corp.	\$158.25
800-mm	Tele-Athenar	4.5-45	65 ft	Manual	Most 35-mm SLRs via a T2 adapter	Century Precision Optics	\$889.50
800-mm	Tele-Nikkor	5.6-22	35 ft w/focusing mount	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$1,137; focusing mount, \$478
800-mm	Vivitar	8-32	33 ft	Preset	"T" system	Ponder & Best, Inc.	\$299.50
840-mm	Fern	5-22		Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$3,190
650-mm	Tele-Athenar	6.3-32	65 ft	Manual	Most 35-mm SLRs via T2 adapter	Century Precision Optics	\$399.50
750-mm	Honeywell Lumetar	6	12 ft	Fixed	Pentax ES II, most 35-mm SLRs with T adapter	Honeywell Photographic Prods.	\$650
800-mm	Asanuma	8-32	82 ft	Preset	All 35-mm SLRs	Asanuma Corp.	\$452
800-mm	Canon FL	8-32	60 ft	Manual	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$950
800-mm	Fern	5-22	25 ft	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$2,590
800-mm	Konica Hexanon ARM	8-45	65.6 ft	Manual	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000, A3	Konica Camera Co.	\$890
800-mm	Mamiya/Sekor	8-32	60 ft	Preset	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$699.50
800-mm	Mamiya/Sekor Auto EX Preset	8-32	60 ft	Preset	Mamiya/Sekor Auto TTL, X1000	Bell & Howell/Mamiya Co.	\$389.50
800-mm	Soligor	8-32	78 ft	Preset	"T-2" system	AIC Photo Inc.	\$495
800-mm	Tele-Astranar	8-32	82 ft	Preset	Petri, Pentax screw-in mounts, most SLRs using T mounts	Sterling Howard Corp.	\$269.50
800-mm	Tele-Athenar	4.7-32	85 ft	Manual	Most 35-mm SLRs via T2 adapter	Century Precision Optics	\$1,450
800-mm	Tele-Nikkor	8-22	60 ft w/focusing mount	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$1,434; focusing mount, \$478
800-mm	Telyt-S	6.3-32	41 ft	Preset	Leicaflex SL, SL/MOT	E. Leitz, Inc.	\$4,295
800-mm	Vivitar	8-32	60 ft	Preset	"T" system	Ponder & Best, Inc.	\$449.50
1,000-mm	Alpa Kinoptik	8-22	9 ft	Manual	Alpa	Karl Heitz, Inc.	\$4,995
1,000-mm	E. Zuiko Auto-I	11-45	98 ft, 5 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$1,495
1,000-mm	Fern	6.3-22	25 ft	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$4,190
1,000-mm	Fujinon	8-45	100 ft	Manual	Fujica ST-701, ST-801, ST-901; Pentax/Praktica mounts	Fuji Photo Film U.S.A., Inc.	\$895
1,000-mm	Konica Hexanon ARM	8-22	82 ft	Manual	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000	Konica Camera Co.	\$1,300
1,000-mm	Kinoptik	8-22	9 ft	Manual	Robot Hoyal, Recorder, Motor Recorder 24 and 18	Karl Heitz, Inc.	\$4,995
1,000-mm	Super-Multi-Coated Takumar	8-45	98 ft	Manual	Honeywell Pentax H1a, H3v, SP 500, Spotmatic I, II, SL, 11a, ES, F, ES II	Honeywell Photographic Prods.	\$1,595.50
1,000-mm	Tele-Athenar	5.6-32	100 ft	Manual	Most 35-mm SLRs via T2 adapter	Century Precision Optics	\$1,850
1,200-mm	Canon FL SSC	11-64	130 ft	Manual	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$1,200
1,200-mm	Tele-Athenar	6.8-32	125 ft	Manual	Most 35-mm SLRs via T2 adapter	Century Precision Optics	\$1,850
1,200-mm	Tele-Nikkor	11-64	130 ft w/focusing mount	Preset	All models Nikon F, Nikon Photomics, Nikkormat	Nikon Inc., sub. EPOI	\$1,709; focusing mount, \$478
2,000-mm	Telaston	10-22	50 ft	Manual	Most 35-mm SLRs via adapters	Ercona Corp.	\$11,900

MACRO

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
75-mm	Kinoptik Apochromat	2-16	4 in.	Manual	Alpa	Karl Heitz, Inc.	\$699.50
80-mm	Photar	4.5-32	For use with bellows	Manual	Leica M with Visoflex and Bellows-II; Leicaflex SL, SL 2	E. Leitz, Inc.	\$281
90-mm	Alpa Super Makro Kilar	2.8-32	5 in.	Manual	Alpa	Karl Heitz, Inc.	\$399.50
90-mm	Super Macro Kilar	2.8-32	8 in.	Preset	Most SLRs via adapters	Zoomar, Inc.	\$295
90-mm	Vivitar Series I Macro	2.5-22	13.9 in.	Automatic	Vivitar-Universal thread, Canon, Nikon, Minolta, Konica, Olympus OM	Ponder & Best, Inc.	On request
100-mm	Auto Bellows Rokkor-X	4-32	1:1 with Minolta Auto Bellows I	Automatic	With Minolta bellows units	Minolta Corp.	\$96.50
100-mm	Canon Bellows FLM	4-22	Focusing by bellows	Automatic with Canon Bellows FL, manual with Bellows R or M	Canon F1, EF, FTb, TLb, TX	Canon USA, Inc.	\$132
100-mm	Kinoptik Apochromat	2-22	1:1	Manual	Alpa	Karl Heitz, Inc.	\$799.50
100-mm	Macro Elmar	4-22	1:1	Click-stop	Leicaflex, Leicaflex SL, SL 2: all with Bellows R	E. Leitz, Inc.	\$360
100-mm	MC Macro Rokkor-X	3.5-22	1.5 ft	Automatic	All Minolta SLR's	Minolta Corp.	\$406
100-mm	Sigma Macro System Focusing	2.8-22	13 in.	Automatic	Pentax, ES, Nikon, Canon, Minolta, Olympus	Photo Specialties Div., EPOI	\$225
100-mm	Soligor C/D Macro	2.8-22	1.37 in.	Automatic	Pentax	AIC Photo Inc.	\$264.50
100-mm	Super-Multi-Coated Macro Takumar	4-22	1 1/2 ft.	Automatic	Pentax	Honeywell Photographic Prods.	\$264.50
105-mm	Konica Auto Macro Hexanon AR	4-22	For use with bellows or helicoid	Automatic EE	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000, A3	Konica Camera Co.	\$199
105-mm	Micro Nikkor	4-32	9 in.	Automatic	All Nikons, Nikkormats	Nikon, Inc., sub. EPOI	On request
120-mm	Photar	5.6-32	For use with bellows	Manual	Leica M with Visoflex and Bellows-II; Leicaflex SL, SL 2 with Bellows-R	E. Leitz, Inc.	\$371
135-mm	Rikenon	3.5-22	Short mount for bellows	Preset	Bellows with Pentax/Praktica thread	Braun North America	\$39.95
135-mm	Sigma Macro System Focusing	2.8-22	22 in.	Automatic	Pentax, ES, Nikon, Nikkormat, Canon, Minolta, Olympus	Photo Specialties Div., EPOI	\$175
135-mm	Topcon-Macro	4-22	Depends on bellows, tubes	Semi-automatic	Topcon Super D, DM, IC-1	Pailard Inc.	\$109.20
150-mm	Kinoptik Apochromat	2.5-22	1:1	Manual	Alpa	Karl Heitz, Inc.	\$899.50
150-mm	Spiratone Macrotel	4.5-22	Short mount for bellows use	Manual	"T" system	Spiratone, Inc.	\$29.95
200-mm	Sigma Macro System Focusing	2.8-22	3 ft	Automatic	Canon, Minolta, Nikon, Olympus OM-1, Pentax, ES, Nikkormat	Photo Specialties Div., EPOI	\$295
200-mm	Sigma Macro System Focusing	4-22	34 in.	Automatic	Canon, Konica, Minolta, Nikon, Olympus OM-1, Pentax, ES, Nikkormat	Photo Specialties Div., EPOI	\$195
300-mm	Sigma Macro System Focusing	4-22	66 in.	Automatic	Canon, Minolta, Nikon, Olympus OM-1, Pentax, ES, Nikkormat	Photo Specialties Div., EPOI	\$295

MIRROR OPTICS

FOCAL LENGTH	NAME	f-STOP FIXED	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
150-mm	Nye Super Tele	1.4-8	9 ft	Radial vane	Most 35-mm SLRs	Nye Optical Co.	\$895
200-mm	Flectan-I	2.8	1 ft	N.A.	Most 35-mm SLRs	Nye Optical Co.	\$295
200-mm	Lyman Alpha I	2.8	1 ft	N.A.	Most 35-mm SLRs	Nye Optical Co.	\$295
300-mm	Hanimex Mirror	6.3	8 ft	Uses filters	Canon SLR, Minolta, Nikon, Pentax, Praktica mounts	Hanimex (U.S.A.) Inc.	\$129.95
500-mm	Alpa-Sport Reflector	5.6	20 ft	Special disk	Alpa	Karl Heitz, Inc.	\$799.50
500-mm	Caspeco Reflex MTO	8	10 ft	Uses filters	Exakta, Exa II, Pentax	Exakta Camera Co.	\$495
500-mm	MTO	8		Preset	"T" system	Arel Inc.	On request
500-mm	Reflex MTO Mirror	8	6 ft	Uses filters	"T" system	Edixa Camera Co.	\$500
500-mm	Reflex Nikkor	8	13 ft	Uses filter	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$582
500-mm	Rikenon	8	13.1 ft	Uses filters	Edixa, Pentax, Praktica, Ricoh, Yashica, Mamiya/Sekor, Vivitar	Braun North America	\$254.95
500-mm	Russian Mirror	8		Fixed	Exakta	Exakta Camera Co.	\$500
500-mm	Samigon	8	10 ft	Uses filters	All "T" mount SLRs	Samigon Div./Argraph	\$194.95
500-mm	Sigma Mirror	8	13 ft	N.D. filters	"YS" system, adjustable to T mount	Photo Specialties Div., EPOI	\$225
500-mm	Sigma Mirror	4	49 ft	N.D. filters	"YS" system, adaptable to T mount	Photo Specialties Div., EPOI	\$895
500-mm	Spiratone Mirror Ultratrel	8	9 ft	Uses filters	"T" system	Spiratone, Inc.	\$129.95
500-mm	Sport Reflector	5.6	18 ft	Special disk	Most 35-mm SLRs	Zoomar, Inc.	\$666
500-mm	Yashinon Mirror	8	13 ft, 2 in.	Uses filters	Yashica J-3, 5, 7, TL-E, Electro, Electro X, Super, Penta-J; Praktica-type screw mounts	Yashica Inc.	\$400
600-mm	Vivitar Series I Solid Catadioptric	8	23 ft	Preset	"T" system	Ponder & Best, Inc.	On request
800-mm	RF Rokkor-X	8, 16	26 ft	Uses filters	All Minolta SLRs, Leicaflex SL	Minolta Corp.	\$914
800-mm	Vivitar Series I Solid Catadioptric	11	23 ft	Preset	"T" system	Ponder & Best, Inc.	On request
1,000-mm	Reflex MTO Mirror	10	25 ft	Uses filters	Exakta, Exa, Pentax	Exakta Camera Co.	\$450
1,000-mm	Hexanon ARM	8-22	82 ft	Uses filters	Konica Auto Reflex, Autoreflex A, T, T-3, A-1000, A3	Konica Camera Co.	\$1,300
1,000-mm	MTO 1000	10		Preset	"T" system	Arel Inc.	On request
1,000-mm	Reflex MTO Mirror	10	25 ft	Uses filters	"T" system	Edixa Camera Co.	\$495
1,000-mm	Reflex Nikkor IC	8	13 ft	Fixed	All Nikons, Nikkormats	Nikon, Inc. sub. EPOI	\$1,156
1,000-mm	Reflex Nikkor	11	25 ft	Uses filters	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$975
1,000-mm	Sport Reflector	8	30 ft	Special disks	35-mm SLRs	Zoomar, Inc.	\$2,103
1,000-mm	Yashinon Mirror	11	25 ft	N.D. filters	Yashica	Yashica, Inc.	\$870
1,200-mm	Vivitar Series I Solid Catadioptric	11	30 ft	Preset	"T" system	Ponder & Best, Inc.	On request
1,250-mm	Honeywell Lumetar	10	16 ft		Pentax ES, most 35-mm SLRs with "T" adapter	Honeywell Photographic Prods.	\$700
1,600-mm	RF Rokkor-X	11-22	70 ft	Uses filters	All Minolta SLRs	Minolta Corp.	\$2,538.50
2,000-mm	Reflex Nikkor	11	60 ft	Uses filters	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$6,890
2,000-mm	Reflex Nikkor IC with mounting yoke	11	60 ft	Fixed	All Nikons, Nikkormats	Nikon, Inc., sub. EPOI	\$6,890 Yoke, \$1,025

SPECIAL TYPES

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
85-mm	Ultra-Achromatic Takumar	4.5-22	2 ft	Automatic	Honeywell Pentax, H1a, H3v, SL, SP 500, Spotmatic I, II	Honeywell Photographic Prods.	\$1,400
100-mm	Auto Bellows Rokkor-X	4-32	Infinity to 1.1 with Minolta Auto Bellows I	Automatic	All Minolta SLRs	Minolta Corp.	\$96.50
100-mm	Varioflex II	5.6-45	1 ft	Manual	Models for major SLR 35s	Ercona Corp.	\$315
200-mm	Auto Medical Nikkor II w/electronic flash	5.6-45	3 in.	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$895 (a.c.); \$945 (battery)
300-mm	Ultra-Achromatic Takumar	5.6-22	16 ft	Automatic	Honeywell Pentax, H1a, H3v, SL, SP 500, Spotmatic I, II	Honeywell Photographic Prods.	\$1,600

ZOOM and VARIFOCAL

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIA-PHRAGM	FITS CAMERAS	SUPPLIER	PRICE
35-70-mm	Canon FD SSC Macro Zoom	2.8, 3.5-22	3.5 ft	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$745
35-85-mm	Vivitar Series I VMC Variable Focusing	2.8-16	4.3 in.	Automatic	Vivitar-Universal thread, Canon, Nikon, Minolta, Konica, Olympus OM	Ponder & Best, Inc.	\$499.50
35-100-mm	Konica Hexanon Varifocal AR	2.8-16	10.6 in.	Automatic EE	Konica Auto Reflex, Autoreflex T, A, T-3, A-1000	Konica Camera Co.	\$699
35-105-mm	Asanuma Multi-Coated Macro Zoom	3.5-16	6 1/4 in.	Automatic	Pentax, Konica EE, Canon FTb, Minolta, Nikon, Olympus OM-1	Asanuma Corp.	\$467
38-100-mm	Tamron Adaptall	3.5-22	11 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$599.95
40-80-mm	MC Zoom Rokkor-X	2.8-22	14.6 in.	Automatic	All Minolta SLRs	Minolta Corp.	On request
40-120-mm	Vario Sonnar	2.8-22	8 ft	Automatic	Contarex	H.P. Marketing Corp.	\$1,050
43-86-mm	Auto-Nikkor Zoom IC	3.5-22	4 ft	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$282
45-135-mm	Petri	3.5-16	6 1/4 ft	Automatic	Petri FT, FTII, FTIII, V6, V6II	Petri International Corp.	\$299.95
45-80-mm	Angenieux Zoom	2.8-22	3 ft, 3 in.	Automatic	Leicaflex, Leicaflex SL, SL 2	E. Leitz, Inc.	\$1,224
45-100-mm	Alpa Variogon	2.8-22	6 ft	Automatic	Alpa	Karl Heitz, Inc.	\$799.50
45-100-mm	Alpa Variogon	2.8-22	6 ft	Preset	Alpa	Karl Heitz, Inc.	\$699.50
45-100-mm	Konica Hexanon	3.5-16	14.5 in.	Automatic ES	Konica Autoreflex, T-A, T-3, A1000, A3	Konica Camera Co.	On request
45-100-mm	Schneider Variogon	2.8-22	6 ft	Automatic	Most SLRs via adapters	Burleigh Brooks Optics, Inc.	\$1,111
45-125-mm	Super Multi-Coated Zoom Takumar	4-22	6 ft	Automatic	Pentax	Honeywell Photographic Prods.	\$550
45-135-mm	Auto Yashinon Zoom	3.5-16	6 ft, 6 in.	Automatic	Yashica J-3, -5, -7, TL-E, Electro, Electro X, Super, Penta-J	Yashica Inc.	\$275
50-125-mm	Macro Zoomar	4	7 in.	Preset	Most SLRs	Zoomar, Inc.	\$266
50-300-mm	Auto-Nikkor Zoom	4.5-22	8 1/2 ft	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$1,020
54-270-mm	EBC Fujinon Zoom	4.5-22	8 ft, 2.4 in.	Automatic	Fujica ST-701, ST-801, ST-901, Pentax, Praktica	Fuji Photo Film U.S.A., Inc.	\$695
60-135-mm	Caspeco	3.5-22	7 ft	Automatic	Exakta, Pentax, Nikon, Minolta, Canon	Edixa Camera Co.	\$239-\$245
60-135-mm	Rokunar	3.5-22	6.6 ft	Automatic	Most popular 35-mm SLRs	Aetna Optix Inc.	\$180
60-135-mm	Rokunar SECS	3.5-22	6.6 ft	Automatic	Canon, Minolta, Miranda, Nikon, Pentax, ES; Olympus OM-1	Aetna Optix, Inc.	\$229.50; \$239.50
65-135-mm	Konica Auto-Hexanon Zoom AR	4-16	59.1 in.	Automatic EE	Konica Autoreflex T, A, T-3, A-1000, A3	Konica Camera Co.	\$340
70-210-mm	Caspeco	4-22	8.2 ft	Automatic	Exakta, Pentax, Nikon, Minolta, Canon	Edixa Camera Co.	\$269-\$279
70-210-mm	Rokunar	4-22	8.2 ft	Automatic	Most 35-mm SLRs	Aetna Optix Inc.	\$200
70-210-mm	Rokunar SECS	4-22	8.2 ft	Automatic	Canon, Minolta, Miranda, Nikon, Pentax, ES; Olympus OM-1	Aetna Optix, Inc.	\$269.50; \$279.50
70-210-mm	Samigon	4-22	8 ft	Automatic	Canon, Minolta, Nikon, Olympus OM-1, Pentax, Pentax ES	Samigon Div./Argraph Corp.	\$199.95; \$215
70-210-mm	Soligor C/D Macro	3.5-22	4 ft, 2 in.	Automatic	Canon FD, Konica T, A, Minolta, Olympus OM-1, Nikon, Pentax, Miranda EC	AIC Photo Inc.	\$375
70-210-mm	Vivitar Series I VMC Macro Focusing Zoom	3.5-22	3 in.	Automatic	Vivitar-Universal thread, Canon, Nikon, Minolta, Konica, Olympus OM	Ponder & Best, Inc.	\$469.50

FOCAL LENGTH	NAME	f-STOP RANGE	MIN. FOCUS	DIAPHRAGM	FITS CAMERAS	SUPPLIER	PRICE
70-220-mm	Asanuma Multi-Coated Macro-Zoom	3.5-22	1 in. (Macro) 5 ft. (Normal)	Automatic	Pentax, Konica EE, Canon FTb, Minolta, Nikon, Olympus OM-1	Asanuma Corp.	\$440
70-220-mm	Auto Alcor	4-22	7 ft.	Automatic	Minolta, Nikon, Pentax	Alco Photo Supply Corp.	On request
70-220-mm	Soligor C/D Macro	3.5-22	4 ft. 3 in.	Automatic	Canon FD, Konica T, A, Minolta, Olympus OM-1, Nikon, Pentax, Miranda EC	AIC Photo Inc.	\$395
70-220-mm	Tamron Adaptall	3.8-22	83 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$359.95
70-230-mm	Rikenon	4.5-22	8.2 ft.	Automatic	Edixa, Pentax, Praktica, Ricoh	Braun North America	\$319.95
75-160-mm	EBC Fujinon Zoom	4.5-22	8 ft.	Automatic	Fujica ST-701, ST-801, ST 901, Pentax/Praktica mounts	Fuji Photo Film U.S.A., Inc.	\$375
75-150-mm	Zuiko Auto Zoom	4-22	about 63 in.	Automatic	Olympus OM-1	Ponder & Best, Inc.	\$369.95
75-205-mm	Minda	3.8-22	8 1/2 ft.	Automatic	Minolta, Canon, Konica, Nikon, Pentax mounts	Minda Photo	\$265-\$285
75-230-mm	Auto-Yashinon Zoom	4.5-22	8 ft.	Automatic	With Praktica thread; Yashica Jc and T.L.s	Yashica Inc.	Under \$245
75-260-mm	Soligor	4.5-22	5 ft.	Automatic	Canon FD, Konica EE, Nikon, Olympus OM-1	AIC Photo Inc.	\$334.50
75-260-mm	Soligor Auto	4.5-22	8 ft. 6 in.	Automatic	Minolta, Pentax	AIC Photo Inc.	\$324.50
75-260-mm	Soligor Auto T4	4.5-22	8 1/2 ft.	Automatic	T4 system	AIC Photo Inc.	\$374.50
75-260-mm	Vivitar Auto TX	4.5-22	5 ft. 4 in.	Automatic	TX system for Vivitar Universal-thread, Canon, Konica, Mamiya/Sekor SX, Minolta, Nikon, Olympus OM, Pentax ES/F	Ponder & Best, Inc.	\$309.50
80-200-mm	Auto Nikkor IC	4.5-32	6 ft.	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$699.50
80-200-mm	Konica Hexanon Auto EE	3.5-16	73.7 in.	Automatic EE	Konica Auto Reflex, Autoreflex A, T, T-3, A-1000, A3	Konica Camera Co.	\$499
80-200-mm	MC Zoom Rokkor-X	4.5-32	6 ft.	Automatic	All Minolta SLRs	Minolta Corp.	\$589.50
80-200-mm	Miranda EC	3.5-22	8 ft. 6 in.	Automatic	Miranda EE, dx-3, RE II	AIC Photo Inc.	\$324.95
80-200-mm	Petri Auto Zoom	4.5-16	8 ft.	Automatic	Petri FT, FT II, FT EE, V5	IMC Div., Interphoto Corp.	\$367.60
80-200-mm	Soligor C/D	3.5-16	6 ft.	Automatic	Canon, Konica, Auto T, Nikon, Olympus OM-1, Minolta, Pentax	AIC Photo Inc.	\$309.50/\$319.50
80-205-mm	Caspeco	3.8-22	8 1/2 ft.	Automatic	Exakta, Minolta, Nikon, Pentax	Edixa Camera Co.	\$240
80-220-mm	Pre Automatic	4.5-22	6 ft.	Automatic	Canon FD, Minolta, Nikon, Konica, Olympus OM-1	Ritz Camera	On request
80-240-mm	Alpa Tele-Variogon	4-22	6 ft.	Automatic	Alpa	Karl Heitz, Inc.	\$999.50
80-240-mm	Alpa Tele-Variogon	4-22	6 ft.	Preset	Alpa	Karl Heitz, Inc.	\$899.50
80-240-mm	Schneider Tele Variogon	4-22	4 ft.	Automatic	Most SLRs via adapters	Burleigh Brooks Optics, Inc.	\$1,421
80-240-mm	Sun Multi-Coated with Macro Focusing	4-16	8 ft. (Normal) 14 in. (Macro)	Automatic	"V3" system	IMC Div., Interphoto Corp.	\$295
80-250-mm	Asanuma	4.5-22	6 ft.	Automatic	Pentax, Nikon, Minolta, Konica EE, Canon, Olympus OM-1	Asanuma Corp.	\$279-\$321
80-250-mm	Tamron Adaptall	3.8-22	70 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$459.95
85-205-mm	Auto Zoom Astranor	3.8-22	7 ft.	Automatic	Minolta, Pentax, other similar types	Sterling Howard Corp.	\$134.95
85-205-mm	Caspeco	3.8-22	8 ft.	Automatic	Exakta, Pentax, Nikon, Minolta, Canon	Edixa Camera Co.	\$240-\$279
85-205-mm	RE Zoom Auto Topcon	4.7-22	9 ft.	Automatic	Topcon Super D, DM, IC-1	Pallard Inc.	\$349.15
85-205-mm	Vivitar Auto Zoom with Macro Focusing	3.8-22	12 1/2 in.	Automatic	Canon SLR, Exakta, Konica, Mamiya/Sekor, Minolta SR, Nikon, Pentax mounts	Ponder & Best, Inc.	\$309.50
85-210-mm	Caspeco Zoom	4.8-55	4 ft.	Preset	"T" system	Edixa Camera Co.	\$160
85-210-mm	Dinar Zoom	4.8-22	8 ft.	Automatic	Canon SLR, Edixa, Exakta, Minolta, Nikon, Pentax, Praktica, Yashica	Edixa Camera Co.	\$180
85-210-mm	Samigon	4.8-22	8 ft.	Automatic	Canon, Konica EE, Minolta, Nikon, Pentax, Pentax ES	Samigon Div./Angraph Corp.	\$169.50
85-210-mm	Spiratone-Sun Auto Zoom	4.8-22	8 ft.	Automatic	Pentax Praktica, Yashica, Minolta, Nikon, Nikkormat, Canon F-1, F3b	Spiratone Inc.	\$114.95-\$129.95
85-210-mm	Sun	4.8-22	8 ft.	Automatic	Minolta, Nikon, Pentax, Canon	IMC Div., Interphoto	\$199.95-\$219.95
85-210-mm	Sun (EE)	4.5-22	8 ft.	Automatic EE	Konica Autoreflex, T, A	IMC Div., Interphoto	\$239.95
85-210-mm	Super-Multi-Coated Zoom Takumar	4.5-22	11.5 ft.	Automatic	Honeywell Pentax H1a, H3v, SL, SP 500, Spotmatic I/II, Ila, ES, ES II, SMF	Honeywell Photographic Prods.	\$549.50
85-210-mm	Tamron Adaptall	4.5-22	70 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$299.95
85-250-mm	Enna	4-22	10 ft.	Preset	Exakta, Edixa, Pentax, Praktica, Yashica	Edixa Camera Co.	\$219.50
85-300-mm	Canon FD SSC	4.5-22	8 ft.	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$895
87-205-mm	Hi Zoom Topcon	4.7-22	9 ft.	Automatic	Topcon IC-1	Pallard Inc.	\$267.60
87-205-mm	RE Zoom Topcon	4.7-22	4 1/2 ft.	Automatic	Topcon DM, Super D	Pallard Inc.	\$349.15
90-190-mm	Caspeco-Kimura Zoom	5.8-22	8 ft.	Preset	Pentax	Edixa Camera Co.	\$100
90-190-mm	Caspeco-Kimura Zoom	5.8-22	8 ft.	Automatic	Pentax	Edixa Camera Co.	\$120
90-190-mm	Auto-Yashinon Zoom	5.8-16	5 ft. 10 in.	Automatic	Yashica J-3, S, -7, TL-E, -Eiaetro X, Super, Penta-J, Praktica-type screw mounts	Yashica Inc.	\$140
90-230-mm	Asanuma	4.5-22	8 ft.	Automatic	Minolta, Nikon, Pentax, Canon FTb, Konica FTA, Olympus OM-1	Asanuma Corp.	\$250-\$279
90-230-mm	Caspeco	4.5-22	10 ft.	Preset	Exakta/Exa II, also "T" system	Edixa Camera Co.	\$100.50
90-230-mm	Caspeco	4.5-22	10 ft.	Automatic	Exa II, Exakta, Pentax	Edixa Camera Co.	\$199.50
90-230-mm	Hanimex Auto Zoom	4.5-22	6 ft.	Automatic	Canon SLR, Minolta, Nikon, Pentax, Praktica mounts	Hanimex (U.S.A.) Inc.	\$309.95
90-230-mm	Mamiya/Sekor Auto ES	4.5-16	8 ft.	Automatic	Mamiya/Sekor Auto XTL & X1000	Bell & Howell/Mamiya Co.	\$289.50
90-230-mm	Mamiya/Sekor Auto SX	4.5-16	8 ft.	Automatic	Mamiya/Sekor, Pentax	Bell & Howell/Mamiya Co.	\$319.50
90-230-mm	Miranda Auto	4.5-22	8 ft.	Automatic	Miranda	AIC Photo Inc.	\$274.95
90-230-mm	P.R.O.-Upsilon	4.5-22	8 ft.	Automatic	Minolta, Nikon, Pentax, Canon FD, Konica EE	P.R.O.	\$254.95
90-230-mm	Soligor	4.5-22	10 ft.	Preset	"T-2" system	AIC Photo Inc.	\$234.95
90-230-mm	Soligor Auto	4.5-22	8 ft.	Automatic	Canon FA, Konica Autoreflex T, A, Minolta, Miranda, Nikon, Olympus OM-1, Pentax	AIC Photo Inc.	\$279.50-\$289.50
90-230-mm	Soligor Auto T4	4.5-22	8 ft.	Automatic	T-4 system	AIC Photo Inc.	\$267.50
90-230-mm	Vivitar Auto-TX	4.5-22	4 ft. 10 in.	Automatic	TX system for Vivitar-Universal thread, Canon, Mamiya/Sekor SX, Pentax ES/F, Nikon, Minolta, Olympus OM	Ponder & Best, Inc.	\$264.50
100-200-mm	Astranor	5.6-22	11 ft.	Preset	Most popular SLRs via T mounts	Sterling Howard Corp.	\$79.50
100-200-mm	Canon FD SC	5.6-22	8 ft.	Automatic	Canon F-1, EF, FTb, TLb, TX	Canon USA, Inc.	\$310
100-200-mm	MC Zoom Minolta Celtic	5.6-22	8 ft.	Automatic	All Minolta SLRs	Minolta Corp.	\$210
100-200-mm	P.R.O.	5.6-22	11 ft.	Preset	Via T mounts	P.R.O.	\$109.95
100-300-mm	Soligor C/D Macro	5-22	5 ft. 10 in.	Automatic	Canon FD, Konica T&A, Minolta, Olympus OM-1, Nikon, Pentax, Miranda EC	AIC Photo Corp.	\$395
100-500-mm	MC Zoom Rokkor-X	8-32	8 ft. 4.5 ft. with close-up Achromat	Automatic	All Minolta SLRs	Minolta Corp.	\$832.50
135-600-mm	Super-Multi-Coated Takumar	6.7-45	20 ft.	Preset	Pentax	Honeywell Photographic Prods.	\$1,995.50
180-410-mm	Asanuma	5.6-32	13 ft.	Preset	All 35-mm SLRs	Asanuma Corp.	\$418
180-410-mm	Rakumar	5.6-22	13.2 ft.	Automatic	Most popular 35-mm SLRs	Aerna Optix Inc.	\$275
180-600-mm	Zoom Nikkor	8-32	8.5 ft.	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	On request
200-600-mm	Tamron Adaptall	6.9-22	112 in.	Automatic	Canon, Konica, Leicaflex, Minolta, Miranda, Nikon, Olympus OM, Pentax ES/F, Praktica, Rollei SL	Berkey Marketing	\$799.95
200-600-mm	Auto-Nikkor Zoom, Series II	9.5-32	6 1/2 ft. with close-up lens	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	\$1,080
360-1,200-mm	Zoom Nikkor	11-32	20 ft.	Automatic	All models Nikon, Nikkormat	Nikon Inc., sub. EPOI	On request
750-1,500-mm	Spacemaster	2.5-25	75 ft.	Fixed	Pentax, Praktica, Edixa	Bushnell Optical Co.	\$181.75-\$184.25
1,500-2,160-mm	Spacemaster	2.5-36	75 ft.	Fixed	Yashica, Penta-J, Exakta, Topcon R.E., Nikon F, Nikkormat	Bushnell Optical Co.	\$181.75-\$184.25
2,160-3,000-mm	Spacemaster	36-60	75 ft.	Fixed	Minolta SR, Canonflex, Miranda	Bushnell Optical Co.	\$181.75-\$184.25

have bothered to use them. In a sense, everything whatever in a picture is a symbol, whether we think of it that way or not. With our minds, we can step around our egos and open ourselves to what these symbols are trying to tell us about ourselves. Remember that on one level of self we already know what they mean, so the process of finding them and deciphering them is not as difficult as it seems.

In some pictures the meaning is much closer to the surface than in others. We can often identify the former by our feelings about them, using the emotional extremes as a guide. If we feel either very exhilarated or very upset we may be sure that we are very close to something coming through to us from our inner selves. What we are close to is usually important to us, though it might be something we would rather not "hear." That is, our egos would rather not. At the same time they *do* want to hear, because it is a good way of expanding and improving themselves. There is a conflict, you see. It goes on all the time.

One of the ego's problems is that it is relatively finite, while the self as a whole is infinite. Thus the ego is terrified of being swallowed up and lost in the immensity. That is, we are deeply afraid of ourselves, and well we should be. A sudden confrontation with his own immensity is enough to give anyone a permanent case of the ravels. However, it is the nature of an art form like photography that this confrontation takes place very gradually, because the higher levels of the self wish to keep the ego healthy and intact, for all its crimes against them. For all its foolishness and stupidity, it is a high spiritual part of a human being. It just needs to learn a few things. Think of it as being like a baby or small child, not like a willful adult criminal.

So you see that our pictures can have a lot to tell us, because there are many levels of the self speaking through each one—unless they are entirely blocked by the ego, which can happen. But listening well to oneself is a very high art not easily learned. It can only be mastered by learning to listen well to others, and you know how that goes. That people intuitively know the royal road to the self is through others helps explain the enduring popularity of classes, seminars, and camera clubs in photography. They are almost always really hard to take, but people sense the good in them and stick it out.

My advice, then, is to join or form such a group, with the primary goal to learn to listen well to other people in all the ways they communicate—not just the ordinary, verbal ones. One good reason is that they will frequently tell you very accurately what you are trying to tell yourself in your pictures, whereas your ego will block you from knowing for yourself.

Like dreams, your photographs can tell you who and what you are. Unlike dreams, they do not fade away and disappear, or get all changed around while you are thinking about them. They are channels to parts of the self that are much greater than the conscious part you know of. For both beginners and advanced workers this material ought to be spelled out a bit, so this is what I will do.

How you really feel about people

One of life's problems is in keeping track of how we feel about other people. There is a lot of suffering, conflict, and confusion involved in this. Recently, for example, I have been working with one of the country's finest portrait photographers, whose attitude toward his subjects is making him miserable. He thinks he sees them coldly and cynically, but this is by no means the truth.

If you were to look at a group of his portraits you would almost instantly see that he adores the people he photographs. I don't think it's possible to groove people more than he does, yet he is quite unaware of doing it. So it is left up to others to tell him, which we are doing as swiftly as we can. His life will then be considerably improved, I think.

With the help of others it is not all that hard to tell from your pictures what you think of people. This is because they act like mirrors when you are photographing them, reflecting back to you your own attitudes, emotions, etc. Since they are entirely unconscious of doing this they do it with great honesty and accuracy. Because the human face is immensely more pliable than generally supposed, it makes a splendid tablet on which to write such messages.

In effect, when you photograph someone you ask him, "Who am I? What am I? And how do I feel?" You invariably get the right answers, though they may be hard to decipher, because your ego does its best to mess things up. However, with the help of others you can do the job on almost any portrait you can make.

Perhaps the important thing to realize here is that at the higher levels of self people are much more cooperative with one another than otherwise. These levels account for this helpful mirroring,

which goes on all the time, whether or not you are making photographs. Thus if you are uncertain as to how you feel, all you have to do is look at the people around you; their faces will tell you.

But sometimes we don't want to see what faces tell us, not on the ego level at any rate. I once had a student, whom I'll call Bill, who had the hardest time getting his own attention. A very productive photographer, he brought in dozens of new people-pictures every week. Every one of his subjects, mainly strangers on the street, looked flat-out paranoid. They were all trying to tell Bill of his own paranoia, you see. And he was trying to find out about it, contrary to his ego's wish to push it all under the carpet.

One reason why this mirroring works so very well is that at higher levels of the self we are all accomplished telepaths and can make it very clear to others what we want them to mirror back for our egos' enlightenment, egos not being telepathic yet. If you don't like this explanation, try to come up with a better one. If you've been around in photography long enough it's hard to escape the fact that mirroring does indeed go on, and it can hardly be accounted for in an ordinary way.

What others think of you

Some people use photography as a way of getting a clearer idea of what others think of them. Though this is a painful way to use the medium it helps clear up inner conflicts. However, the mirroring makes interpretation difficult. How can you tell whether you are looking at a person acting as a mirror or, instead, coming across as himself? I can't give you an easy answer for this, because I don't know one.

Nevertheless, we can look at our pictures of people and get some pretty good clues concerning how they see us. Perhaps we do it mainly by feel. There are surface clues, such as tensions in the eyes, mouth, neck, and shoulders. The hands communicate a good deal, as does posture. On the ego level, people don't want you to know what they think of you, but, impelled by the higher levels of their selves they are always giving themselves away. It is human destiny that people will eventually get to know one another well, so this is the general direction we are taking, despite ourselves (egos).

There is an ancient truism that makes interpretation a little easier: Like begets like. For example, if you think a person a fool your attitude will breed similar thoughts in him with respect to you. That

is, he will see you in the way you see him, as a fool. Thus if you make him look like one in a photograph you may be fairly sure that the feeling is reciprocated. Like begets like is one of the higher laws of psychology. As far as I know, it never fails.

I remember a student who brought me a picture of his best friend's father. He was terribly happy when I saw that he was portraying him as extremely egotistical. Though I was considerably less blunt than he, he was considerably less happy when I told him the attitude was undoubtedly reciprocated, and that the picture showed this clearly. It was a case of egotist vs. egotist.

So, if you want to know what people think of you, just figure out what you think of them. Having pictures of them will help a lot, because they won't bite you and can't talk back when you're talking to them. As a guide for analysis, remember this rule: The characteristics that disturb you most in others are ones you share with them, though you may not be aware of it. If self-knowledge is one of your goals in life, photography can help you a lot—but it won't always be easy.

Fear of others

Quite a few people use photography to help them uncover, analyze, and dispel their fear of others. They do this mainly through making many portraits of their friends and acquaintances, whom they also inexplicably fear. But the fear is less and they can work with it.

Just looking at people up close, and thinking the thoughts that go with it, can help a lot. However, we need an excuse for it, which photography readily provides. Also, the very act of photographing someone gives the photographer the psychological position of strength, which helps him greatly in holding himself together.

It might seem strange that merely taking pictures of people would help you overcome your fear of them, but that's the way it works. Few people are able to verbalize what is happening to them as they photograph, though they usually know they are frightened. They just dive into portraiture and wade their way through, no matter how hard it is on the gut. Please don't construe this as a kind of masochism, because it is far from it. Indeed, it is a pathway through fear to the other side, which is a horse of a different color.

If you are an everyday scaredycat, as most of us are, you might consider specializing in portraits of your friends and

acquaintances for a while. One nice thing is that you don't have to tell them what you are going through, though you can if it helps. Your camera gives you the only excuse you need for what you are doing, and your subjects are very unlikely to question it. Indeed, they are just happy to know that you want pictures of them, for it is a very nice compliment.

Experiencing a new language

For unknown reasons there has been a great upsurge of interest in photography recently. Most obvious in Japan, where nearly everyone has turned into a shutterbug, it is also making itself felt in this country and elsewhere. I personally think that this interest has to do with language and the fact that photography has finally reached the point where it can function fully on the linguistic level. If this is true, it means that photography has become, or soon will, a cultural necessity, just like the spoken and written languages.

I also think that photography is unconsciously, but very skillfully, being used to develop the foundations of the language of telepathy. It is well-known that people are telepathic on the higher levels of unconsciousness, but nearly forgotten that talents such as this can also shift levels, even into consciousness. Considering all that is happening in the world of photography, which includes film and television, I wouldn't be at all surprised if we were unconsciously preparing ourselves for such a shift, even in the near future. This would also account for the unexplained interest in the medium.

In terms of telepathy, photography's long preparation as a language has been vitally necessary, because it must have the breadth and flexibility to cope with every conceivable linguistic event and to take within itself both the spoken and written languages. Otherwise, people would be easily overwhelmed to the point of becoming zombies by the images in their heads. Though it would be much simpler if I were wrong in this matter, I nonetheless think we're headed in this direction at a rapidly accelerating rate. At our present level of human development we seem to be headed pell-mell into chaos—except for photography.

Let us now consider photography-as-a-language on a more mundane level, letting the future take care of itself for a while. As a teacher for many years, I've put in thousands and thousands of hours working with groups in photography. Seminar stuff, mostly, where people came together to talk about their work. It

used to be such a terrible grind for the teacher, because no one had a word to say. The teacher himself had to make up all the meaning that got attached to the pictures, fighting each point with students who were certain that photography didn't mean anything at all. And most professionals felt the same way. I'm telling you, it was really hard on the gut, trying to convince all those people that their lifework actually had meaning.

Well, quite a change has taken place since then. The groups you met with now actually think that photographs can mean something and that it is fully worth one's while to try to decide what it is. I've sometimes read about the famous group of literati who used to meet at the Hotel Algonquin in New York—Dorothy Parker and her crew. Frankly, I doubt if the discussions would hold a candle to the ones you can now get into with groups of photographers in almost any part of the country. Viva the difference, I say. We've even reached a point where one can be a teacher of photography without sacrificing his sanity, solar plexus, and left hind leg.

These present-day groups are actually having a terrific time together, though it can get very heavy, too. However, they take the heaviness as part of the learning process and learn to take a good deal of it without backing off. In this sense photography groups are a lot tougher nowadays, more inclined to hear people out than to turn them into hamburger before they've said two words. In the old days they were only interested in silence or mutual laceration, the old "I win, you lose" bit.

So this is what is open to you now: If you work hard to make pictures that communicate something you can actually find people who will work equally hard to determine what it is. And often you'll get through to them like the Red Ball Express, which is a wonderful experience. Furthermore, you will almost invariably learn that your pictures say much more than you thought, which is equally rewarding. To be able to communicate fills a deep human need, and when it involves a new language you are mastering, like photography, it is outright thrilling.

A thing that happened in young people's music is also having a strong effect on photography. A few years ago the kids decided that literally everyone should have his say in music, even if he didn't know music from a corn cob pipe. I think this was one of the most brilliantly revolutionary things of my lifetime. It meant that anyone at all could try to

make music, not just the tremendously gifted.

Fortunately, the very same young people have brought the idea into photography, though there are still some laceration specialists around. The right people aren't huffing and puffing to tell you how bad your work is; they are patiently waiting to tell you what it communicates to them, if that's what you want. This is one of the things that seems to support the idea of a coming telepathic age. In such an age a person's communications will have to be heeded, even if they aren't spectacular and important.

What things look like

When we are little we are very interested in what things look like and spend the long days soaking it all up. However, as we move out of our teens many of us have lost all interest and never get it back. Now, not caring what the world looks like is a very dull state of being which contributes greatly to the general malaise that afflicts so many. You might even call it a psychological illness.

Fortunately, photography is a powerful tool for regaining an interest in the appearance of things. It presents reality to us in such a magical way that we find it nearly impossible to resist. When an image builds up in the print tray it really gets to us, excites us. Only a very dull character can ignore its blandishments. And the magic continues to work long after the print has been washed and dried, too, for here is something specific to talk and think about.

So if you find that your visual world has lost its spice, photography may be the very thing for you. If you are already involved in it consider yourself lucky. Compare yourself to all the millions for whom the world is just a vast monotony of nothingness and count your blessings.

Heightened visual perception

It is not only possible to regain interest in the visual world but to learn to perceive it with an intensity never before experienced. For example, you may now think that the so-called "fluorescent" colors are the liveliest ever, but did you know that it is possible to see nearly all man-made colors that way? It is a wild and wonderful experience, I assure you, and some people see that way most of the time.

Some people see the world as much brighter and cleaner than others do, some even to a point where they have to wear dark glasses to bring it down to a bearable level. You would be mistaken

to think that people wear such glasses only if there is something wrong with them. Often, they mask a very superior sensitivity and awareness, for the same people who see brightly also see a lot more things around them.

Now, the practice of photography moves one surely and gradually in the direction of heightened visual perception, and there is much more to such perception than I have suggested. It is like moving into a new and unspoiled world, which is about the only way of explaining how it feels—the unspoiled world of a child's perception, if you like.

You don't especially need signs and guideposts for this journey. Just jump into photography and follow where it beckons.

Awareness of time and space

Over the years I have learned that photographers are fascinated by time and space, though I don't really know why. The space part is easy enough to figure out, because most photographs embody space illusions of some sort—positive space, negative space, or non-space—or a mixture of them. I've personally played endless hours with visual space and consider myself well-versed on the subject, but what about time? I've played with that for years, too, but have little idea what it is all about.

Talking to other photographers hasn't helped, either. They can't seem to verbalize what they are up to, though their enthusiasm is communicated strongly enough. Most of them don't even try to translate from photography into words, yet they may be right. Perhaps photography, a non-verbal language, is a good way of intuiting time, not intellectualizing it. Though we are doing our best to translate all of photography into words, and vice versa, there will always be large and important areas that just aren't translatable. Perhaps time is one of these.

I've noticed that people need little experience in photography before becoming enchanted with time, and that they don't seem to mind pursuing their interest on an intuitive level. They relate it to tone and space, but more by waving their hands or shrugging than by trying to say anything. I think we're involved with a growing awareness of some kind, which would explain the enthusiasm. At any rate, I feel free in recommending photography to you for this time and space involvement, even if I don't really know what they are. I have at least recognized the excitement they have generated in others; and some excitement is

better than none.

Insights into visual communication

When we speak of the visual communication world we are usually referring mainly to television, which is a form of photography. We put TV first simply because it takes up more of our time than any other visual medium.

Now, TV and still photography are undoubtedly more closely related than anyone supposes, but I think people are beginning to tumble to this in droves. It would help explain the growth of interest in still photography. For years we passively submit to a daily bombardment of TV images until we finally reach a point where we feel we are ready to put the whole thing together in our minds as a language structure that we are fully conscious of. The grammar of this language is outlined best and most simply in still photography, so this is where we turn.

Nowadays, students have a lot better idea of where they are going with their photography than they used to have. Many of them have their goals pretty well set by the time you first see them: to put it all together, this vast puzzle of the so-called communication world. Well, they've been well-prepared for it through their whole lifetimes; television itself has done that, though that wasn't what it was intended for. On the level of the racial unconscious we often do better by ourselves than we consciously intend to. From this level has come the intuitive guidance that has shaped all of photography, including television. The turn to still photography is a natural move in taking over the new language we have prepared for ourselves over the years: the language of telepathy.

For all their experience with images, people still have a lot to figure out concerning what makes visual communication work. So they are doing it; simple as that. Photography was just sitting there waiting for them, including thousands of fine teachers who just weren't available a few years ago—and thousands of fellow students with the same interest in putting it all together. I would say that the setup is nearly impeccable—much to my surprise. This doesn't mean that the learner won't have his ups and downs, but they are an important part of his growing experience. If things looked *too* good I would be worried.

One thing that especially interests me is that so many of the people using photography to figure out the visual communication thing for themselves don't ask for help. By themselves, or with a friend or two, they sail right into it, asking and

answering all the questions for themselves. On a racial level their ability to function independently is a very good thing. If we are indeed moving into a shift of awareness levels there would otherwise not be enough teachers, despite their great increase in numbers in recent years. I have a feeling, however, that TV itself is doing the major part of the teaching job, though few seem to suspect it.

Hidden levels of the self

A few years ago if you told someone he had levels of himself quite unknown to him he would just sit there like a constipated oyster with not even a "So what?" expression on his face. I ought to know, because I have the world's record for the number of times I've told people this. But I'll never get used to those oysters just sitting there without a burp.

Things have changed a lot in the last few years, however, and the average kid knows very well about these hidden levels and has done everything he could think of to gain access to them. This was what the Drug Scene was all about, of course, and explains why Don Juan has become America's Guru-in-Chief. After racking themselves up with the hard way of trying to make higher contact with themselves, many of these kids have turned to gentler and more gradual routes, such as music and photography. There they experience enough to keep themselves spaced-out as much as they like.

Essentially, being spaced-out means to be in contact with your higher self or with someone else's, which also happens quite a bit. Many of the young—and their elders too—have experienced the contact so often that they seem almost indifferent to it. At least, they don't seem to be making any great efforts to put it all together and make it do something. They merely want to experience being spaced-out for itself.

However, there are some real heavy types, many of them in photography, who really want to put the whole shooting match together by figuring out, bit by bit, what is actually going on in themselves, why, and how it all works. These heavy types are emotionally a very tough crew, because they can take punches in the gut that would fracture an elephant and come back for more. They *really* want to learn about themselves, in fact consider it their spiritual duty. I quite agree with them.

Now, if you assume hidden levels in *yourself* expressing themselves somehow through your photography you will

not look at pictures in the same way as a person who doesn't make this assumption. He may assume that he completely understands his own photography, while you see yours as mainly a puzzle to be unraveled. As you look at your work you constantly ask yourself, "What does this mean? What am I trying to tell myself, if anything? What am I really trying to communicate to others? And on what level?"

This would seem like a fruitless occupation, because where will the answers come from? Simply, they come from your hidden self, popped right into your conscious mind, as soon as you are ready for them. If an answer would be too hard to take you won't get it until you've prepared yourself for it. The higher part of yourself takes very good care of your ego, you see—if your ego will let it.

For a person aware of the hidden levels, looking at a picture becomes a subtle form of listening, too. As you look you listen to your own thoughts, trying to stay aware enough to pick out the ones that don't sound especially like you. These are the thoughts that may initiate in your higher self. However, your ego would like to take over this act and can peddle some very fancy blarney when it wants to. But in time you manage to sort out which comes from where. Best to stay alert for ego twinges, for they don't usually come from thoughts initiated by the ego, though it sometimes does it accidentally.

I've already said that you learn most about listening to yourself by learning to listen to others, so don't neglect that part of your education. The harder a person is to listen to the more you can gain from associating with him. This sounds like looking for misery, and it is, but it really cleans out the psychic channels.

Perhaps you don't see any point in self-discovery; many people don't. If so, it is probably because you don't have any idea of how utterly marvelous the whole human self is, your self, even. Seers have often pointed out that the human idea of gods is actually descriptive of an ordinary human self in its wholeness, and that's saying quite a bit. So if you should actually manage to discover your self you are going to be onto something large and wonderful far beyond what you can now even imagine. Anyway, you have to do *something* with your time. Why not try to discover who and what you really are? Or do you think you already know?

Meditation while printing

Quite a few people have noted that

printing can be a form of meditation and that they enjoy this meditation deeply. It sounds deadly serious, but it doesn't have to be: You just let your mind wander wherever it wants, which you probably do anyway. It is really simple as that. Given this chance, your mind can have a very good time, because it loves to wander around.

Silly as it sounds, you might try talking to people while printing their pictures, even though they are nowhere in sight. I personally get a big charge out of it, muttering to myself like a loony curmudgeon, and find that it really helps bring back memories of the people I'm talking to. It is almost as if they were standing there watching me print their pictures. Even if it doesn't make much sense it makes me feel very warm toward them, and that's a good ticket to many a ball game.

Pictures give you something to focus your attention on almost effortlessly. Oh, you fume and fuss if things aren't going right, but if they are it's all candy. You can just poop along and enjoy yourself, carrying on endless dialogs with whomever, or whatever, you are printing.

There are lots of formal ways of meditating, and you can look them up in books on Eastern philosophy. However, they are not well-adapted to the Western mind and can lead you around the barn or get you into trouble. You might persuade yourself that you are a somebody. Better stick to the Western style and just wing it. Let every printing session be a play, with you the director, the stage manager, and all the actors. It won't make you any crazier than you already are.

I know photographers who talk to their pictures all the time, not just while printing them. Since it is a kind of private affair, I don't ask them why they do it, but leave them alone. However, I assume they must be getting something, or they wouldn't always be doing it. They all seem in good mental and emotional health, too. Perhaps the silent dialog helps them in this direction.

The nature of your musings will have quite an effect on your prints, incidentally. For example, if you talk yourself into a heavy case of the friendlies with a subject the print will almost certainly be better than usual.

A harmless experience with power

It is said that power corrupts and that absolute power corrupts absolutely. In international relations and higher levels of government we see enough of this to accept it as a truism. Power is danger-

ous and not something to fool with blindly. However, we also need the experience of power now and then to convince us we aren't quite as helpless as we're prone to think. Indeed, a normal human being is a real powerhouse, if he but knew it.

A safe way to experience power is in one of the arts, as people have learned through the ages. Those who can make good pictures have a strong effect on others, and that's what power mainly is. The effect we mostly strive for is to open up people's heads and hearts to what we are trying to say to them. We assault them with our pictures, in a sense, and a byproduct of this is gradual but certain expansion of their perceptivities, which is a good thing. With it comes a breaking down of the communication barriers that hold people apart.

But we don't have to assault people all the time: We can beguile them with lyricism and beauty. Here's where the *real* power is, anyway, and we don't have to worry about the personal dangers of misusing it. Power used poetically is the glue that holds whole civilizations together, for it is not the nature of poets, whatever their media, to misuse power. They use it to heal.

The rhetoric is stratospheric, so let's come down to land. When you personally make a picture that someone really digs you'll know what power is. The chances of pleasing people with photographs are getting better and better all the time, because they are getting really steamed up about photography *per se*. So you want someone to think you are at least as bright as a tumblebug: show him some photographs.

Your concepts of beauty

On an elementary level people all recognize beauty easily and agree on what it is, but there are levels and kinds of beauty we can't recognize without preparation. Fortunately, photography can do this for us, both through our personal work and the photographs of our finest photographers, both historical and current.

The basic notion of beauty is rather biological: If we want to eat something or kiss it we call it beautiful. However, this doesn't get us very far in learning to see reality itself as beautiful, which is actually what we want to do from the depths of our hearts. In fact it inclines us to see ugliness everywhere, with infrequent oases of beauty.

A better concept of beauty is to equate it with goodness: If something is good it is beautiful. We already think this

way a lot of the time, but we should push it further. For example, we say a beautiful person has a good face or a fine car a good design. Homely people and things can be seen as beautiful, too, because of their goodness, though some people don't want to see it. This reluctance is not something we should be placid about; as a race we should rise above it. Fortunately, photography has been pushing in this direction for years, trying to show people that goodness and beauty are the same thing.

However, it can be equally hard to see either beauty or goodness when you are shooting, especially if you are a cynic or a pessimist. The world then looks pretty rotten and people are measured only in terms of their failures. Because cynicism and pessimism make you miserable and an outcast from life it would be wise to overcome them, and a good starting point is to begin measuring people more by their intentions, which are good more often than not. And their intentions can be captured in photographs, too. For all their failures, people do try pretty hard, and try and try and try. So why not bow to their efforts with your camera now and then?

The basic problem of the cynic is that he can't forgive himself. Then he projects his supposed sins onto everyone else and the world itself and can't forgive them, either. A person like that ought to say "I forgive you" under his breath every time he shoots a picture of someone or something. When he has done enough of this he will find he has also forgiven himself.

We could accurately say that self-forgiveness is the royal road to seeing a world of beauty and goodness, and we shouldn't forget the law of "Like begets like." Every time you forgive a bit of the world it forgives you in turn.

What I'm trying to say is don't be proud of being a cynic: You are only being a nit. Instead, use your photography as a celebration of others who, like yourself, are only doing their best. If you want to see goodness and beauty all around you the fastest way is to forgive a few things. Showing this attitude in your pictures will really make you feel good, too.

The problem of anger

If you are one of the Angry Ones, what you have just read will probably infuriate you. Good thing. Stop and think it over carefully: What are you *really* angry about? I'll push harder on the prod to make sure I've gotten your attention. You know, anger is fear and only fear. It

always has been fear and always will be, though we con ourselves into believing it's something else. Even a *noble* something else. Poof to that.

I used to specialize in giving people like you the needle. Big square needles jammed in with an eccentric rotary motion. Lots of rust on 'em, too. But I've lost interest in that kind of tiddlywinks. Now I'm mainly interested in what you *do* about your anger, especially in photography, which is a very good outlet for it. It is also a fascinating question of who gets who first: Do you get your anger or does it get you? Don't make the mistake of thinking it can't murder you.

Well, my Smoldering Friend, anger is something to use, and if you use it well you will accomplish a great deal and find yourself beyond anger altogether. Then you will find even better sources of energy within yourself. Love, for example.

One of the angriest men I've seen in ages had the right idea: Use the energy of your anger for good causes. With his cameras, he took off against environmental pollution, breaking his back to illustrate it graphically and bring it to people's attention. His anger was so great that people got the fidgets just being near him, but he sure turned out a monumental amount of work—and possibly saved his own life at the same time.

I know other apoplectic types who have turned to photography, but your problem probably isn't that severe. Though ordinary anger is quite bad enough there is a much better chance of getting insights into its nature and of working your way through it. The really furious types have little insight—or they wouldn't be so furious and proud of it. I remember one whose deepest desire was to murder me on the spot (for showing him his anger), but he didn't have a clue of it. And I laid it on him two days a week for a whole summer. Touchy business, you know.

Let's say your anger is curable; it usually is. To really satisfy yourself and learn what your anger is all about you want to take it out on other people. Putting grenades in rotten pumpkins just won't do the job, though it helps. Well, the best way is to use your photography to teach them things they need to know but would rather not. Considering people's resistance to learning, the list of such things could be astronomically long. Even confronting a person with an ordinary photograph can do the job, because he's afraid you'll find out he has nothing whatever to say about it.

Pick your list of things to do to people carefully, making sure you are trying to

help them. Otherwise, you'll offend your own ethical sense and eventually do yourself in. You can think of yourself as an angry surgeon paring off dead flesh, but for the Lord's sake don't let anyone know that's what you're thinking. Cultivate some kind of dumb and innocent role to play, like Candide or Ferdinand the Bull. And learn not to see it when people are thinking of punching your nose. Say something nice to them and you'll really confuse them—disarm them, too.

If you're clever you can use almost any photograph at all for this game, but be sure to honor your ethics while you're doing it. Moreover, be a constant observer of your thoughts and emotions. Anger has many, many disguises, but gradually you will identify the ones you use. When you come to the point of actually seeing that fear and anger are one you will be well along your way and can hope to see the end of your anger altogether. Oddly, it is much easier to cope with fear-as-fear than with fear-as-anger. You are much closer to the basic nature of yourself, you see. One of the nicest things about uncovering your fear is the unexpected discovery that you are afraid of very little.

It is a little hard to be a popularity queen and a miserable bastard at the same time, but you can master it if you try. Just be sure to be highly selective in your photographic mayhem, doing your very best to make sure people will benefit from it. Where your photography is not concerned you might try being generally nice to them, too. Wouldn't hurt a bit. You will find that in using your anger consciously to open people up you will hurt them much less than if you let it unconsciously sneak out.

Remembering your life

I have told you some of the strange and wonderful ways in which people use photography, and there are many, many more—perhaps as many as there are people. As a great new language, photography has an infinity of possibilities. Its adaptability to individual lives is incomparable. At the age of 54 I now find myself using it in a way I hadn't anticipated. Since it is completely delightful I will tell you about it.

I find that I am using my negative and contact files to reassemble whole big chunks of my life—large expanses of it forgotten entirely. Like a dutiful squirrel I've saved everything, good and bad, so there is quite a bit to work with, though I've *never been very diligent about taking pictures*. Like yourself, I just take

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them when I feel like it or when I get pushed into it.

I look mainly through my contacts, because most of my pictures were never worth enlarging, even when I shot them. I just went ahead and shot them anyway, Lord knows why. Somewhat to my surprise I find I've gotten over my acute embarrassment at possessing all this pictorial junk: I see the bad and good pictures in the same way nowadays, and they're a gas. They are really swell, all of them.

If I had been told 20 years ago that I would eventually learn to love all of my pictures I would have told my informant he's crazy. But there it is: I love them all, the failures as much as the winners. And this love helps the memories come back. Your ego gets unhooked from your photography eventually. Then you can look at your work impartially, digging it for what it is, a pliant and warm tool for recovering your past.

I needn't tell you that memory can be painful, but you ought to know that the pain disappears in time. As you gradually learn to accept yourself it just goes away. Viva la disappearance! Then your personal collection of visual trivia begins to take on a life of its own. You can talk to it by the hour, always with delight. You should know that imagination can bring almost anything to life, especially photographs, which seem so close to life, anyway. You can also imagine the life out of things, as so many people do, but that's a rather silly way to treat yourself. Who wants to live in a lifeless world?

One of the things that makes memory painful is that it constantly reminds you that you don't really know what you are doing most of the time. In time you learn that we're all pretty much in the same bucket and that it doesn't matter very much, after all. The earth somehow manages to turn on its axis without our knowing and diligent help. Since not really knowing what you're doing when you are photographing is a problem shared by nearly everyone, it is nice to know you'll get beyond worrying about it. Then the failed pictures that hag your life turn into loving friends.

You can even get to the point where one picture is as good as another to you, no matter who shot it, why, where, or when. Then the world of memories stored up in all of photography becomes truly accessible to you. You have to pretend you like this picture better than that one, or people will think you're a bit wacky and lacking in taste, but you don't have to believe what you tell them. Just go on liking them, one and all, and letting them talk to you. 

EDOUARD BOUBAT
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assignment. I was truly anxious to go. I stayed in the United States for four months, photographing constantly. It was for an issue of *Réalités* completely devoted to the United States. I traveled by train, by airplane, by Greyhound bus. I went to California, I traveled through the South. It was a marvelous time for me. And when I returned, the director said to me, "We would like you to work for us exclusively." And I remained with them for 15 years, traveling all around the world.

W.R.: When you photograph in a strange country, for instance in India, how do you begin? How do you choose a place to work, how do you make friends?

E.B.: I am the opposite of a tourist. Tourists know everything; my feeling is that I know nothing. I am there to learn. And so I prefer to stay in one place.

The first time I went to India, I stayed with a family. That is my first problem. To find a family I wish to live with. My way of working is really quite simple. I take a taxi and find an area that interests me. When I see a group of people standing around I stop and begin to speak to them. I ask if there is anyone who speaks English, and there are usually one or two who do. So, I tell them that I am a photographer and I would like to find a family to photograph. It is that simple.

I don't want a family that is too poor, I don't want to do something that has too much misery. I find a family that interests me, that I would feel compatible with, preferably a family with children. And I ask if I can photograph and they say yes, for in India no one ever says, "No." So I stay with them, and I eat there every day.

What I do in India I can do in France, in America. When I went to America for *Réalités* in 1953, we chose Jefferson, Ia. We had previously written, and the mayor helped me to find a family. I stayed for 15 days photographing this small town.

In India, America, France, it is always the same approach. And my technique is the same. I use a Leica most of the time. I find their lenses excellent. I do my own processing when I can, though there is a lab in Paris that I use when I simply do not have enough time. I've settled on one film, Tri-X, and one developer.

W.R.: Do you experiment much with papers and developers?

E.B.: When one prints one's own work, one can put a bit of oneself into the photograph. It is important. But at the same

time it is not everything. Because I believe that in a photograph that is badly printed, there is still a spirit that remains even if it is a photograph in a newspaper—like a fine book that is badly translated. A fine print is, of course, important. But a strong photo, even badly printed, will still retain a good bit of its spirit.

W.R.: What did you do when your contract with *Réalités* ended?

E.B.: It was in 1966. As with most picture magazines, television had cut badly into their circulation. You, too, have lost *Look*, *Life*, and many other magazines as well. I became a free-lance photographer, and that is how I earn my livelihood.

It is a miracle, but I manage to live by my photography. Besides my free-lance work I have been working on picture books. A book called *Women* was published in France and England, and a book of my photographs is being published by Bucher in Switzerland. [*Now available in the U.S. as Edouard Boubat by Bernard George, Macmillan, \$10.95 hardbound, \$5.95 paperback.—Ed.*] Last year I worked on an interesting project which will be published shortly. It is titled *Mirror*. Each of 60 writers, some quite famous, has been asked to write about what he thinks of his own face, and my portrait will accompany each text. It is an interesting experiment, a bit diabolical, because you know that most people do not like the way they look. In fact, they may detest the way they look. But it is an assignment that I enjoy doing. I find that in my reportage it is generally the portraits that interest me the most.

W.R.: How do you go about an assignment of this kind? Do you first research what each man has written? Do you treat the portrait as a kind of still-life composition? Do you try to draw certain reactions from your sitters by speaking to them or directing them?

E.B.: Your question is very difficult. The answer lies in how you approach the subject. The key word is *approach*. I never try to intrude, to give orders, to frighten people. Perhaps sometimes I ask someone to move slightly because of the light, but I always try to leave people the way they are. I try to disappear in front of my subject, to erase myself so that the other can appear. It isn't deliberate. It just happens because of my way of working. I am not there as a judge. I may have my opinion about my subject, but if I do not intrude, my subject will appear in his portrait, he will be there.

I truly believe that photography is the

popular art of our time. Photography can speak to all the world, not only to the intellectuals but to people who are quite simple. My baker is a charming man whose shop is on the ground floor of this building. And he appreciates my work as did my father who was a cook. Photography can go directly to one's heart, and that is what is significant.

And yet, there are things I cannot understand. I photographed 60 writers for *Mirror*, and among the 60 there were only two who knew anything about photography. There are some of our leading intellectuals. It is quite bizarre.

But yet, in your country, it is quite different. There are many fine writers who have been interested in collaborating with photographers. There are museums, there are universities devoting themselves to photography, but here, hardly a soul.

Mr. Lemagny of the Bibliothèque Nationale came to see me and he said, "It is necessary to have an exhibition here. You are the only one, it is you." I said, "Gladly." He said, "In France, you have to move along official lines." Mr. Lemagny is a fine person, but there is no money for him, nothing.

W.R.: How do you explain this strange state of affairs in a country that gave birth to photography?

E.B.: It is a country that is very traditional, where everything is marked: that is art, that is *not* art. Only the traditional art forms are respected. England faces a similar problem. The Tate Gallery will not show a work of art unless it is made by hand. Whereas in your country, everything was new. But it will begin again here. I am not crying because happily, as though by a miracle, I still have work and I continue to live. But I live like a bird on a branch, I have no idea of the future.

And yet, there are terrible injustices done. Eugène Atg t is one of the greatest artists that this country ever had. He struggled all of his life in great poverty. And you know how he died. This is not generally known, but Atg t died of hunger. When he was found dead in his apartment it was discovered that he had died of hunger. What a horrible story! But everything in France is like that.

When I had my show which you saw at the Biblioth que, people would say to me, "Oh, photography is beginning to be an art. If you continue this way it will become an art." But my answer is, "It isn't that which interests me. I don't care about art or not." Photography attracted me because it is a means of expression, *because of its humanity, that is what interests me.* If it is an art, then, bravo! But

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there are those who cut it off because they get hung up on this stupid question.

Photography is not like the cinema; they have the same parents, but in cinema one can recreate anything; one can organize everything.

Painters can make things out of thin air, but I can't make photographs out of thin air. Raphael could invent his sky, but my sky is here in everyday life. That is the difference. But, within photography's limits, we can find a limitless world. That is to say, a spirit—a way of revealing reality in a new fashion.

W.R.: I went to the Villard show in Paris recently, and the catalog had a quote from Goethe that speaks to me of your work. "When one doesn't speak of things with a particularity full of love . . . what one has to say does not really need to be reported."

E.B.: I agree. I have always felt that it was necessary to do work that is closest to oneself, to one's heart. Look at Renoir who painted his cook, his family, his friends. I think that in photography one can travel quite far, one can go to China, but also one can go into the smallest French village and photograph the life of everyday. I can also photograph people who are very close to me, people I love, my wife or my son. I think that what is closest is also, then, the most intimate; and there, photography has its word to say. To be truly creative is to do those things that are closest to one's heart, not to do the work of another, but to be uniquely oneself.

W.R.: Perhaps the time will come when photographers will be able to live by the sale of their photographs as works of art. There is a trend in this direction in the United States. An original print by Margaret Cameron has sold for \$3,500, a Strand for \$1,000, a Weston for \$700. An Atg t sells for many hundreds of dollars when they are available. And prices rise every day. When the public begins to recognize that photographs have a dollar value like a painting or a piece of sculpture, perhaps things will change.

E.B.: I hope that you are right. We have been in the habit of giving our photographs away. Give something away for nothing, and people will not respect it as having any value. It is like that—but now you have given me hope. Perhaps the day will arrive when I can get a decent price for my prints. I could continue to do my work, to do my photography. I could visit with you in the United States. You give me courage. But still, if you find an American who would say, "Edouard, come and photograph in a small village for 15 days," I would go quickly.



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talk to these men, who seemed to sit on that front porch all day, every day. Their house has since been torn down to make parking lots for the Lincoln National Life Insurance Company. Occasionally we see them downtown, and they always hail us as 'Scotty' because we once told them we had some Scotch ancestors."

There was something about the street that made a strong impression on both Dave and Pete that day—a sense of community that was markedly different from their own middle-class neighborhood, an openness among the people themselves and with outsiders who proved to be no threat, a feeling about the place that was strong and positive. So they decided to collaborate on a project to photograph the street and its people for as long as it would take to put together a fairly comprehensive group of pictures that would hopefully convey something about what the place and its people were like.

McClellan Street is three blocks long and populated by low-income whites (some of them Appalachian people) and Mexican-Americans. It borders the downtown business district and the black inner city. The houses, which were originally occupied by homeowners, are now occupied almost entirely by young couples with small children who rent, and their general condition could be described as run down.

As for the people and what they are like, some of the boys' observations are well expressed in a paper Dave produced—after the project had been substantially completed—for one of his college courses. "Many of the houses," he wrote, "have been made into apartments, with one family living on the top floor and another family living below. Most of the adults living on the street are between 20 and 40 years of age. The men are factory workers, garage workers, or mailmen, while those women who work are factory workers or store clerks.

"There are many grade-school-aged children living on McClellan, but few teen-agers. Teen-agers get married at a young age, and many people on the street have been surprised to find out that my brother and I are not married.

"In the families we have encountered, the mothers have been the disciplinarians, and usually strict ones. They look after and assume authority over their neighbors' children as well as their own. The closest friends of most families liv-

ing on McClellan Street are their neighbors, except for one or two exceptions. Residents of the street walk in and out of each other's yards freely and spend a great deal of time together sitting on front porches on week nights and week-ends. Wives who don't work spend much time together while their husbands are at work and their children at school. Mexicans and non-Mexicans interact freely; if prejudice exists it is never apparent.

"Yards on McClellan are tiny, so children play kickball and baseball in the street. During the summer the city government considered building a playground on a vacant lot in the area, but the proposal was rejected because it seemed probable that most of the houses would be condemned soon.

"For most families on the street, television is the main source of recreation and information. While most of the homes get one of the two daily newspapers that Fort Wayne offers, world and national news are rarely mentioned.

"An important subject for discussion for McClellan inhabitants is their common fear of robbery. The street's location and the fact that it has no street lights make it a 'hoodlums' paradise' as one resident calls it. 'Beware of Dog' signs appear in many yards, 'Dog' most often being mythical.

"All of the children of McClellan Street that we have met seem to assume a great deal of responsibility and seem to be very sophisticated about sex. However, in all other respects they seem like children everywhere. They have fun and worry very little. Their fresh, carefree faces contrast dramatically with the harder, weathered faces of the adults.

"If the people of McClellan Street feel hopelessness, despair, or bitterness at their lot, we have never heard it voiced in any way. In the months my brother and I spent with our friends, we never heard them complain about their condition to each other or to us. I will never forget the McClellan Street lady who stopped me on the sidewalk to ask incredulously, 'Why on earth would you want to take pictures of this mess?' When I answered, 'Because you all seem to be pretty happy,' she looked at me, smiled wryly and said, 'Son, if we spent any time thinking about where we lived, none of us would ever make it.'"

When both Turnley boys began the McClellan Street project they had been interested in photography only for about a year—Pete a little longer than Dave—and this was their first real venture into anything that remotely resembled an

honest-to-goodness photographic essay. Up until that time they had, for the most part, been learning the fundamentals of photography, partly on their own and partly by taking courses.

But even before the project began, they had already experienced a taste of success with their picture-taking endeavors. Pete had become head photographer for his high school newspaper and yearbook, the *Elmhurst Advance* and *Anilibrum*; had won a Kodak Medallion of Excellence in regional competition of the Scholastic Photography Awards (for the picture of the old man they tracked down to McClellan Street, which was displayed in the national exhibit at the Kodak Gallery in New York); and was also awarded \$100 for a picture he entered in the International Newspaper Snapshot Awards.

Dave had won both a regional and a national award in the same contest run by Scholastic Magazine, and also was tops in the Fort Wayne Camera Club's Print of the Year contest. In addition, they had had a two-man exhibition in the Fort Wayne Public Library.

So they began the McClellan Street project with a fair amount of photographic know-how, although the only equipment they had to work with for awhile was one Nikon and 50-mm lens between them. They acquired another Nikon and normal lens as soon as it became apparent that sharing just one outfit was not going to work if they both wanted to shoot at the same time, which they did. Throughout the late spring and summer of 1973 they drove to the street after school (they were seniors then) three or four times a week, walking around, sometimes separately, sometimes together, getting to know the people, explaining their good intentions, winning confidence, and taking pictures. They stayed around three, four, and sometimes five hours, all day on Saturdays and many Sundays too.

"We encountered several problems in taking pictures on McClellan Street," writes Dave. "Our biggest task was to get people to trust and accept us, a task which was not easily accomplished and, in some instances, never accomplished. Most people, understandably, were very suspicious and questioned what the photographic significance of their street was. In trying to remove this suspicion our approach was to be perfectly honest and completely reveal our motives. We told the residents we talked to that we were interested in putting together a group of pictures representing all the people on McClellan Street, and that we

were interested in the street and in the people who lived on it. Most of them could not really understand this, but nevertheless accepted our word.

"We always talked to prospective subjects and got permission to take pictures, for we considered it very important not to invade their privacy against their wishes. Many people felt that there was really nothing they could do to prevent us from photographing them, and we spent a great deal of time convincing them that it was their right and choice to refuse.

"Another thing we did to encourage trust was to give each person a copy of every photograph that included him or her. Most people enjoyed this—in fact, looked forward to the prints they came to expect—and we didn't feel as much that we were exploiting them.

"In trying to capture people in as normal a situation as possible and in trying to disrupt the affairs of the street as little as possible, it was important, but very difficult, not to be conspicuous. On a Sunday afternoon, with everyone sitting out on his porch, it was almost impossible for us to walk up and down the street with cameras around our necks and not be the center of attention. While this problem did hinder most of our efforts at first, after a couple of weeks the people began to get used to us and we became less and less noticeable."

The boys became particularly close to one family named Garcia, on the street, and they feel it was this family's warm acceptance of them almost from the very beginning that made it possible for them to become accepted generally, and to get the project to work. Jesse and Suzy Garcia, the parents, are in their late 30s. Their youngest children, Danny, Jesse, and Hopi, are five, six, and seven years old respectively. There are also two married daughters in their early 20s who live on nearby streets with their children and non-Mexican husbands. Grandfather Garcia also lives in the neighborhood with his much-younger wife and their five-year-old son. All these people—plus an assortment of unrelated friends and neighbors—spend a lot of time hanging out at Jesse and Suzy's, and there is, obviously, rarely a dull moment. Dave and Pete were among those who were always welcome to just walk in the door unannounced at any time and consider themselves at home.

"Last Christmas," says Pete, "when I went back to visit, they brought out a scrapbook of all the pictures Dave and I had given them—there must have been close to 100—and it was really some-

thing for me to look through it and see them all together. I was so pleased with the way it looked, and how it represented the family."

This ability on the part of Dave and Pete to become accepted in a place where they did not naturally belong has its roots in their experience over a two-year period when they were younger and were living just a few blocks from the Indianapolis Speedway. Says Dave, "During the month of May we almost lived at the track, much of the time in the pits and garages where supposedly we didn't belong. On race day we would watch the race in the Tower Terrace with Tony Hulman and his friends—always, of course, as uninvited, unpaid, unnoticed guests. Pete thinks it was there that we developed the state of mind that made it possible for us to get into places to take pictures later. We found out there, when we were 9 and 10, that if our intent was not malicious we had nothing to lose and everything to gain in approaching anyone, no matter how important, or going to any place, no matter how forbidden."

Both Dave and Pete are very concerned that their motives in having gained entrance and acceptance into the lives and world of McClellan Street not be overdramatized or misunderstood. The project was not done, they hasten to point out, to make any kind of sociological study or to draw conclusions.

"We never felt we were going there to look at the people to judge or objectify," says Pete. "It's important to us that our role not be pretentious. We kept going back because we liked the people, and liked being around them. I see them more as friends than as people I took pictures of. We had good times there, some of our best times, and being accepted as friends by the people was a very wonderful experience—still is. Their lack of pretense and their spirit in the midst of constant problems—even disasters—gives me a pure and optimistic feeling. And it's important to us that our work shall never rob them of any dignity."

The project continued into the fall of 1973 while the Turnley boys were beginning their freshman year at the University of Michigan, but gradually their major energies became directed elsewhere (although they continued to revisit McClellan Street periodically to maintain the friendships they made there). Pete got a part-time job as photographer for Fort Wayne Urban Affairs Department and did a picture story portraying the life and environment in Westfield Village, a

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controversial housing project. He also put in some time traveling in an ambulance with the city's Emergency Medical Service on the inner-city run, which he found to be an extremely demanding job photographically. This past year he went to the university full time where he seems to be heading toward specializing in urban affairs, and as this story goes to press in late April he just learned that for the summer he will be traveling around California taking pictures of poor, Spanish-speaking people for the state's Equal Opportunity office.

Dave got a part-time job with the Fort Wayne *Journal Gazette*, the city's morning newspaper, while going to school during the 1973-74 year, and did a picture essay on the people who attended the annual Fort Wayne Three Rivers Festival, which was published in June, 1974. He also won an award in the 1974 Kodak International Newspaper Snapshot Awards Contest. Last summer he loaded up a portfolio of his and Pete's McClellan Street photographs and came to New York hoping to show them to editors, agents, and photographers for evaluations and to see if the pictures might be worthy of publication. He met Cornell Capa (International Center of Photography), John Szarkowski (Museum of Modern Art), and the people at the Magnum picture agency, among others, and was stunned by how warmly he was received in most places and how helpful people were.

"I had written out a list of New York-based magazines and hoped that maybe somewhere I could talk my way through a secretary to a picture editor," he recalls. "It is hard to believe that so many important, busy people were kind enough to give time, criticism, and advice to a 19-year-old out of nowhere." Last year he returned to the University of Michigan for the first semester and then transferred to the Sorbonne in Paris to study French. While in Europe he continued with his photography and took it upon himself to meet some photographers including Marc Riboud and Henri Cartier-Bresson who welcomed the young student into his home one afternoon, spent considerable time talking with him, and even took him along to a party the same evening where he met a lot of other notables in the Paris photographic scene.

What both Dave and Pete will be doing with their formal education and their photography this coming year was still a question mark at press time, but it seems not unreasonable to expect that the future will be bright. □

WESTON CONNECTION

continued from page 15

result of this increased edge density is an apparent increase in the sharpness of the negative because the various light and dark areas are delineated much more clearly. Instead of a subtle shift from a light area to a dark area, you have almost a fortified boundary.

This effect results from the rapid exhaustion of developer that affects highlights (heavily exposed portions) compared to the longer action of developer working on the shadows (less exposed portions). With a concentrated developer, this exhaustion effect is so minimal as to be virtually nonexistent. But with a dilute developer, the concentration of developer is less so that exhaustion occurs sooner, thus increasing the Eberhard Effect and, fortunately for us, the apparent sharpness of the negative.

This developer also increases the apparent brilliance of the negative, as well as increasing the gradation. Gradation might be compared to a ladder with a series of steps; at the bottom is black, at the top is white, and in between is a series of grays—the familiar gray scale. High-speed films generally have a longer scale, or a softer gradation. There are more steps from white to black and each step is closer together. Slow, thin-emulsion films have a shorter scale, or a harder gradation; there are fewer steps from white to black and each step represents a considerable distance.

This is depicted graphically through the characteristic curve that simply plots on a graph the steps from black (underexposure) at the foot of the curve to white (overexposure) at the shoulder, or top. Slower films generally have steeper slopes.

However, by using dilute developers with slow films, the inherent contrast of this type of film is softened somewhat so that you have an increased number of steps. But at the same time, you maintain your advantages of increased sharpness and a fairly brilliant negative.

At this point, we might say something about grain. The traditional relationship between speed and grain still remains; faster films have coarser grain, slower films have finer grain. There was a time when grain was a major problem for 35-mm photographers and all efforts were devoted to getting as fine a grain as possible. In recent years, however, a whole new generation of black-and-white films has been developed in which the grain is relatively fine and not as important as other qualities, such as speed or sharp-

ness. In fact, the objective in printing is to optimize sharpness by focusing on the grain. If you use fast films and grain bothers you, there are still very good

Checklist for Optimum Quality

- 1. Focus carefully**
Make sure your eyesight matches your camera's focusing system. Unless you have 20/20 vision, wear your glasses for focusing or get correction lenses for your camera viewfinder.
- 2. Avoid camera shake**
Don't expect maximum sharpness from hand-held exposures of more than 1/125 second. Where possible, use 1/250 second or less.
- 3. Don't overexpose**
With Panatomic-X or Pan-F, use an exposure index at least 50 percent higher than the manufacturer's recommendation. In most cases, doubling the indices will provide optimum results, particularly with high-energy developers like FG-7 and Rodinal. If in doubt, check the developer instructions, then make a series of test exposures.
- 4. Use dilute, one-time developers**
Among the developers suitable for this type of work are:
D-76 diluted 1:1
HC-110 diluted 1:31
FG-7 diluted 1:15 (with water, not sulfite)
Rodinal diluted 1:50 to 1:100
Acutol (check manufacturer's instructions)
ACU-1 (various dilutions; check instructions)
Ethol TEC
FR x-22

fine-grain developers available including Microdol-X, Edwal 20, and Panthermic 777. However, you do lose out on emulsion speed and maximum sharpness, a price which in my opinion is too high. A far better way of getting fine grain is to use a slow film and take advantage of the fine grain built into the emulsion, then use a dilute one-time developer to enjoy the fantastic sharpness and lovely brilliance that this type of film provides.

A working method

By now, theory should give way to practice. What are these super-films and how are they used?

There are, unfortunately, only two films widely available that fall into the super-quality class. The first is Eastman Kodak's Panatomic-X, supplied in 35-mm and 120. Although Kodak recommends a rating of 32 for this film, I find the results better when it is rated at 50-64 and developed in FG-7, 1:15, for 10 minutes at 70 F with intermittent agitation (about 5 seconds every minute). Too much agitation produces too much contrast and too much exposure produces too much density and a loss of picture quality.

Resolving power of Panatomic-X is given as "very high," about 136-225 lines/millimeter. By way of comparison, Tri-X's resolving power is given as "high," 96-135 lines/millimeter. The graininess of Panatomic-X is "extremely fine" while that of Tri-X is, according to Kodak, "very fine." This short description indicates why Tri-X is very good, but Panatomic-X is, in the terms of this article, better.

The second high-quality film is Ilford Pan-F, a greatly improved version of the old and honorable British product that has held its own in the sharpness-fine grain club for many years. Pan-F is somewhat faster than Panatomic-X. I suggest an exposure index of 100 (its nominal rating is 50) developed in FG-7 at 1:15. On careful comparison, I am forced to call the contest (Pan-F vs. Panatomic-X) a draw. You can develop either of these two films in manufacturer's recommended developers or in such proprietary developers as FG-7, Rodinal, Paterson Acutol, or Baumann Acu-1.

For careful craftsmen who are looking for the ultimate in print quality—ultra-sharpness and virtually no grain—the H&W people have come up with a new combination, H&W VTE Pan and VTE Ultra Films, plus a new developer, VTE 4.5 Developer. The VTE (very thin emulsion) Pan can be exposed at an index of 80 and the VTE Ultra at 25. When processed

in the 4.5 Developer, results are spectacular. If you elect to try the H&W route, remember to follow instructions exactly and use the combination; you can't use the film and somebody else's developer.

These very thin-emulsion films started life as high-contrast films for copying and have a rather steep curve. In practical working terms, this means relatively little latitude as far as exposure goes and limited ability to handle contrasty subject matter. Accurate metering or bracketing can handle the exposure latitude problem—in addition to careful choice of subjects to avoid excessive contrast. Or else simply determine the tone range of the areas you want to record and expose accordingly. For example, if you want detail in shadows, be prepared to lose highlight detail from blocking, while if you want highlight detail, be prepared to lose shadow.

Whether you go the Panatomic-X or the somewhat more demanding very thin-emulsion film route or, in the end, decide to stick with Tri-X, depends upon your standards and the kinds of pictures you want. Obviously, if you use 35-mm cameras to record life in the raw, you need the speed and flexibility of Tri-X. But if you are tired of pictures that never seem quite sharp, try the slower films, used as they were meant to be used, on subjects that require fine detail or for prints requiring high degrees of enlargement. If you don't need an enlargement greater than, say, 15 to 20 times, Panatomic-X should work well. If you want to go over that, use H&W.

But the goal set in this article was a top-quality 8x10 (or 11x14 at maximum) print. A negative from any of these films will provide a pleasant surprise when you insert it into the enlarger. The negatives should print beautifully with a brilliance or sharpness that will make you forget larger formats. Used for 8x10 prints, for example, this method may even lead you to compare yourself with Weston.

The ultimate question is not whether one film is better than another. The point is that your 35-mm camera is a far more versatile system than is generally realized, not only mechanically and optically but also chemically. If you need speed you can have it. If you want optimum quality, you can slow down and produce prints that will make 35-mm a serious competitor for overall quality honors with larger, less adaptable and less convenient formats. In short, take advantage of your advantages—you've got almost the best of all possible worlds. □



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balance doesn't change very much; it changes primarily in density, whereas a dye transfer print will also change in color balance. The dye transfer typically will turn reddish, because the cyan dye goes faster than the other. A typical Ektacolor transparency will fade in about three months and ours you can leave hanging for three years without fading."

The stability of the Cibachrome image, Krause said, will depend on the environment in which it is kept. If indoors under conventional illumination, like tungsten or anything that people normally use indoors (excluding mercury arc lamps), Krause said the Cibachrome prints can last 30 years or better. Outdoors, however, it depends on whether sunlight will fall directly on the print, and depends also on the latitude in which it is hung. It really depends on the total amount of radiation that is incident as well as the spectral quality of the light. So if you're going to be in Florida and show the picture under direct sunlight, the print will fade a great deal faster than if you take it to New York City where (a), the sun doesn't shine very much, and (b), when it does shine, it isn't nearly as intense—and you have more

in the way of pollutants to contend with.

From Polaroid a new kind of dye

How does the Polaroid Corp. stand in the matter of color permanence for its materials? "Our traditional peel-apart color films have the same kind of warrantee against fading that conventional color films have and like them are subject to fading," Don Dery told me for his company. "However, the SX-70 film has considerably greater durability and stability because the dyes are metallic and in the tests that we've conducted have outlasted conventional color prints or our own color films by a factor of six to eight times." The prints can be shown in any light, he says, without appreciable fading. Polacolor film, however, "has the same kind of vegetable dyes that you get in any of Kodak's films or Ilford's or Fuji's or anybody else's. But the dyes in the SX-70 films are virtually indestructible, and therefore have archival permanence."

Concerning the reluctance of museums to hang color prints like dye transfers (although Marie Cosindas' have been shown at The Museum of Modern Art and elsewhere) Dery said he could understand their attitude because there is no question that there's going to

be some fading unless they're very careful with the lighting. The dye technology which has been used in the SX-70 film was invented specifically for that film and was a special Polaroid development that "is not commercially available because we invented it, it is protected by patent, and we're the only ones who have access to it."

Artistic manipulation of SX-70 image

A special property of SX-70 film that permits artistic manipulation of the original image is being exploited by at least two artists, Les Krims, artist, photographer and teacher, and Lucas Samaras, sculptor and printmaker. Soon after SX-70 came on the market, Polaroid invited several artists to explore the film's potential for changing the original image through pressure with a hard-edged tool of some sort—anything hard, stylus, pencil, pen, stick of wood—on the transparent mylar-plastic covering.

After exposure, you draw the super-imposed image on the print, which remains semi-liquid for about two days (thus free to be worked on), after which it hardens permanently.

"I saw people discovering this for themselves," Krims says, "just by scratching with the fingernail and pushing the emulsion around with the

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finger. You don't puncture the plastic covering; you just go through the Mylar without cutting it. Once the color solidifies, it won't change any more and will harden permanently. It's really putting painting and photography together."

Krims is not disturbed by the possibility that the SX-70 prints will fade. Polaroid Corp. has told him, he says, that it has a permanence of something better than a C print and not quite as good as Cibachrome. Because he has two alternatives—one, to turn them into high-quality four-color offset reproductions that so far as he is concerned function in a way equivalent, although not the same as a photograph. Another way, he said, would be to have the SX-70 prints copied very carefully and turned into dye transfers.

"The fact that these might not last a couple of hundred years is of no interest to me," he said. "Also you have to consider what these things will sell for, not for a great deal of money but certainly for as much as a small painting. Lucas Samaras had a show last year where his SX-70 prints were going for as much as \$1,500 (beautifully mounted). They now sell for \$850. Through Witkin I'll probably be selling mine for between \$350 and \$500 each depending on the number of variations of any single image. Some of my images are one of a kind, others are done with as many as eight variations."

He explained his technique: "I work basically with ideas, so I'll set up an idea and make a series of exposures of what essentially is the same idea, exposing 20 or 30 sheets of SX-70 films at the same time, without changing or moving anything. Exposure is difficult to control so there is a great deal of variation from one sheet to the next. I'll eliminate those I can't use and work with what's left, usually 12 or 20 images, until I've exhausted ideas for manipulating them. I show only my best work. If I like eight of the variations I will put a price of \$350 on each; if there are only three, the price is higher, say \$500."

As an artist, the problem of color fading is not a new one for him, Krims says, "because my training originally was not as a photographer but as an artist, and artists are always dealing in one way or other with fugitive materials; in fact, a lot of materials that artists use are quite a bit more fugitive than anything photographers use, like certain paints which are made with synthetic pigments, and will fade or change in color."

Lucas Samaras on SX-70 manipulation

"As an accomplished artist, don't you

feel you might do better working with actual paint or drawing than manipulating an existing image?" I asked him. His reply was almost a rebuke: "I think you have to accept whatever people do; you can't say: couldn't you do it better another way. So you look at what they're doing and either like it or not like it. Would it be better? I don't know. It would be different." Samaras' images sometimes tend almost toward abstraction; those by Krims are more like straight photographs, embellished with novel effects.

"The manipulation is not much," says Samaras. "Anybody can do it, but the art is in what you do with the medium, and all that." Why did he pick this medium? Did it suddenly occur to him that it might be a new thing to do? No, Polaroid Corp. sent him a camera and film and he "played around with it, and liked it." Did he catch on to the technique right away, or was there a certain procedure involved? "The original thing is simple," he said, "anybody can do it. For pressing tools I used anything, a piece of wood, the back edge of a ruler, whatever would make a dent." I told him what Dery had said about the robustness of SX-70 films, that because they were metallic dyes, they would last a very long time. Samaras was not impressed. "Let's wait 40 years and see what happens," he said.

Give it to a lab, or do it yourself?

Aside from the hazards of displaying color prints, longevity of the print also hinges on the quality of the processing. The professional lab, says Ken Lieberman of Berkey K&L Color Labs, knows best by far and can hardly be matched by photographers who do their own processing—either for creative reasons or/and because it's cheaper.

It may make good sense in black-and-white, Lieberman thinks, but not in color. The photographers can't do it; they have neither the facility nor the know-how. Does the fact that the photographer only photographed the image and the lab made the print take the color medium out of the realm of creative photography?

"I don't think so," says Lieberman, "because these guys are over my shoulder watching us make the print, deciding which print will go out with their name on it, so in effect the only thing I'm doing is getting my hands in the chemistry while they're around approving every print that goes out."

The color lab is especially useful where volume is concerned, as in the

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case of the limited-edition color project Lieberman was turning out consisting of 750 color prints of each of six pictures by Jay Maisel which The Collectors Guild had ordered for general distribution under their auspices at \$90 each on Type C paper, framed.

To produce quality color prints consistently, top photographers inevitably must come to the professional color lab to do the job, says Lieberman. "The little guy who can't afford \$50 or \$100 for a color print is fooling around with it by himself but in no way can he produce a print in color comparable to mine because of the volume of work that's done in the lab."

The key thing with the museums with regard to acquiring color prints is will it last, and how long, and there is no answer; even the manufacturers don't know.

"This is one of my pet peeves with the museums," Lieberman says. "The point is they're not spending \$5,000 or \$10,000 for the photograph, so what if they have it for only 10 years, or 15, for the few hundred they're paying for it."

"The question of longevity is raised so frequently that I'm reaching the point where in answer to the museum's questions on that, in the case of dye transfers, I'll probably guarantee the print for 15 years against fading provided the print is not subjected to sunlight, and if it fades at the end of the period to replace it free of charge."

Moreover, he says, there is no justification for the print collector to refrain from buying a color print because of the danger of fading. Because of the three black-and-white separation negatives made for the original print, fresh dye transfers can be made in say 100 years "as bright and clean" as on the day they were made originally, and at nominal cost, only a fraction of the original cost.

Those easy-does-it kits

Can you wrap up briefly what the inexpensive color kits now on the market are all about, I asked Patricia B. Anderson, manager of color production at Moderate Custom Labs. She obliged:

"Virtually all of the amateur kits oriented to color have one basic goal, to make it easy and quick as possible. But if you make it too easy and too quick, something must give, and that is quality of the results. To achieve speed and simplicity of operation, what the manufacturers have done is to cut development time down to the bone, leaving the amateur on the fence between print quality and

rapidity of access. It's a question of marketing, rather than the product itself. If you deviate from the books you must know how to deviate, and if you do, which the average beginner does not, I would say that any of these processes is capable of yielding quite respectable prints. The principle of the kits is very similar: to make just as few steps as possible, and the shortest possible steps. The paper is supplied with the kits under the name of the maker of the kit. As to permanence, there is no such thing when using these kits. Too much is sacrificed to speed of access, such as cutting down the time required to stabilize (harden) the print in development."

This leads eventually to fading, she says, because "it's one of the steps that's very easy to skip."

In the matter of permanence, she says that "theoretically any lab today should be able to turn out prints with maximum potential for permanence but whether they do or not is a question—whether they are replenishing adequately, or something goes wrong with replenishment and they were under-replenishing the stabilizer. A lot of such variables can begin to affect the ultimate lifespan of the print. So processing can be even more critical in assuring protection against fading than display."

"The mere act of putting a print under glass will preserve it as long as it is not touching the glass, which is a matter of moisture; minimizing the amount of airflow to the print will tend to promote its life expectancy. The glass will tend to inhibit ultraviolet rays, which will also prolong its life expectancy." Among other anti-fading devices, she referred to a range of lacquers made by George Gorgi Process in Yonkers, N.Y., not only for protecting prints but to create a tooth surface for retouching, etc., but one of the important qualities of the material is that it has a vinyl base, which is virtually indestructible. You can spray a print with it, run your thumbnail down it and you can't see where you did it.

Carbro, which uses pigments instead of dyes, hence exceeds the latter in lasting quality, was mentioned by some of the individuals interviewed for this article as the ultimate in color methods. The drawbacks are unavailability of materials without going to some trouble, excessively long processing time, etc.

"I've talked with a lot of people who were heavily involved with carbro," says Ms. Anderson, and on the basis of these talks she says she has formed the opinion that "the best of the old-time carbro

prints is not as good as dye transfer is capable of being . . . except for the person who has all the time in the world and the money."

The color photographer as printer

Dorothea Kehaya, the most dedicated and possibly the most skillful and talented color photographer-printer I know, will have none of this let-the-lab-do-it routine. If she were incapacitated, she says, and simply was forced to use a lab, "I absolutely would have to be there and see exactly what they're doing, and checking out every move they make. Suppose I were physically unable to print my own color, and I needed a technician who would do what I told him to do, burn in here, dodge there, this is the result I want. He then becomes an extension of me. I've developed a certain style over the years. I move a certain way with my hands, I give certain exposures, I hold back certain areas and I'll be damned if I know how much time I give anything. I print for certain periods of time with certain developers. I mean it's just something that you know by feel and by eye. It has become a style. You can train somebody to print your way, yet in color I think it's more difficult than in any other area because of the local controls that you have. For instance, you can use a filter pack to handle the general, all-over scene of your picture, but there may be certain areas that you want to change, and using a dodging tool, you can literally hold back those colors and change them. I can take one of my own photographs, make a print from a negative, print directly with the pack, then use a local kind of thing, hand the print to K&L and their best technician, and say, 'Now you match that.' They can't do it."

"As far as permanency goes, I can't guarantee that, neither can anyone else. Carbro is the only thing I know that's permanent, but it runs into enormous expense and runs into a lot of time."

After seven or eight years of working in color, Ms. Kehaya says she fails to see any fading, even in color prints hanging near a tungsten light at a friend's house. She says she has "never seen color prints that haven't lasted, so I don't even know what they're talking about."

Another advocate of color on your own

Murray Alcosser, a master electrician by profession, makes color prints at night in his modestly appointed home darkroom, and over the past 10 years has built a reputation for simply conceived ideas beautifully executed. He

works primarily for himself as opposed to other color photographers who have their work done in color labs.

"Prints I have made 10 years ago on the first Ektacolor process," he says, "are still as good as when I made them. They still have contrast and the colors are good. With any other color medium, whether it be a painting, graphics, or even black-and-white, an exposure to the ultraviolet radiation of sunlight over a prolonged period of time would cause fading. It's a natural phenomenon. So it calls for careful watching. Furniture, carpeting are equally affected. Anything that has a dye, even a dye transfer, if left out in sunlight very long will fade.

"People hear by word of mouth that C prints are unstable and dye transfers are extremely stable, but they are only slightly better than C prints when you consider the difference in the cost and the problems of making a dye transfer.

"All my prints are C prints; I use fresh chemicals every time. I mount the print on an archival board, Strathmore 100 percent rag. Years ago we didn't know about that. To me the most practical way of making prints at home or in a studio is Type C, the only practical way of controlling density and filtration. It's not easy but after years of doing it, developing the technique along with the color eye has made me very familiar with the process. You don't have to work as hard as you used to because the process has been refined to a point where only three chemicals are involved as opposed to five or six required originally."

Fading no concern of Stephen Shore

I asked Stephen Shore whether fading posed a problem for him.

"It's no problem," he said. "What collectors don't realize is that any color dye or pigment of any kind is going to fade. This is why museums don't have permanent exhibitions of watercolors or drawings—because watercolors tend to fade. Even paintings are subject to fading eventually. An oil painting if kept in sunlight will fade rather quickly. Japanese woodblock prints will fade faster than photographs. When people pay \$70,000 for a Cezanne watercolor, this doesn't seem to be a major question. They just take eventual fading for granted and make the extra effort needed to protect it when they show it. We know that color prints are not going to last archivally as long as black-and-white. So you enjoy them as long as you can. What the collector is probably worrying about is that he's putting out say \$10,000 or whatever and this thing eventually is going to go.

But if it lasts for 10 or 20 years you simply go and buy another one. They're spending \$150 to \$300 for my color prints. I don't know how long they'll last but I think for my lifetime. I don't think it's a real concern of mine. My concern is in taking pictures. I find that as time passes more of my attention is focused on being as attentive as possible when I'm taking the picture, and this is the enjoyment and excitement I get from photography."

Shore has his color prints done at the Berkey K&L Color Labs. He once used a smaller lab for his color work but switched to the larger facility because he felt his prints needed the consistency of a big machine, a consistency assured by the automatic replenishment of the chemicals to keep the processing constant.

In addition, he turned to using a view camera, an 8x10, because he found that the less the degree of enlargement the greater was the beauty of the result. He felt the color was improved by the large negative and contact printing.

Had he thought of doing his own printing?

"No, if I felt it very important to make my own prints I would have found the facilities and would have done it. But personally, for my work, I'm pleased with the results I get from the lab. There was a time when I was shooting 35-mm film and using Kodak-made prints. I had to send them back infrequently to be re-done. I found there was a consistency in them, however, and that if I understood the consistency with which they were processed I could then take pictures with that in mind. It's like working through a lab whose habits you know. And so you work accordingly."

If color fades, try alternatives

Referring to color print permanence as a "traditional problem" Nathan Lyons, director of the Visual Studies Workshop in Rochester, N.Y., suggests such alternatives as photo silkscreen, offset lithography, and the nonsilver processes, all of which besides others are taught at his workshop. People who do not want to get involved in direct color systems find in these more stable and less expensive methods attractive alternatives without the uncertainties of color techniques that are subject to fading in time.

"There are exquisite color processes," he said, "that are extensions of photo-mechanical printing, which we are exploring at our school. Museum curators who want color but have budget difficulties can find in these approaches



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highly acceptable material at lower expenses than color entails." One of the workshop's most popular teachers has been Syl Labrot, "who is one of those people who has worked through all of these color processes, from legendary carbro, "and now he's working on silk-screen printing and offset lithography. Some of his silk-screen prints are so precise that they remind one of his old carbros. They're different but the precision is the same and the quality of the precision is the same. Here is a man in our time who still has that old sense of high craftsmanship that is rare today."

I took Lyons' advice and visited Labrot in his spacious studio on New York's East 10th Street.

Just how permanent does permanent have to be?

Syl Labrot wasn't asking. The question was rhetorical.

"If you put a dye transfer out in the sun for a week there will be changes. On the other hand, you put it in a drawer for 20 years and there won't be changes." But, then, paintings and other media are not permanent either, although more permanent than most color photography.

"The most impermanent processes seem to be the mass processes. That is, Type B, Type C, Kodacolor prints, etc., and the most permanent processes seem to be those that are the most individual; that is, if one gets into dye transfer or gum printing or those offbeat color methods which are really almost a hand-done color print rather than a standardized form of color print. As far as perhaps the standard reality image that the other prints give, hand-done prints are individualized, less true to color, so to speak, than true to life. But the whole idea of true color photography is a very vague concept to begin with. What happens is that we get used to a certain standardized look and we come to accept that as the true look of color photography. Many prints can fade and not lose their quality esthetically, just as many paintings have changed a great deal since they were originally done and they still carry the basic ingredient of whatever it is that makes them great."

Labrot discussed in this connection the very early Edward Steichen prints. Did they really look like they do today after the passage of decades? They're still around.

We talked a little about carbro, which he had himself practiced 15 to 20 years ago, the "royalty" of the color field and definitely the most permanent of the

"high fidelity" color systems.

But it has the bad feature of being difficult to do, I said.

"Very difficult and very time-consuming," Labrot commented, "and not a multiple print process; it's a one at a time process. It takes at least a day to make a carbro print, and the materials are of questionable availability, although I've heard that they're once again available."

The alternative that made Scott Hyde famous

Not just as an alternative really, but you do it for its own sake—Scott Hyde was commenting on the gum-bichromate technique with which he has been associated for some years.

"I got into these things thinking they'd be more permanent than other color materials," he said. "I realized when I cooked up this kind of picture that I make (which is to say a synthetic color picture or a multiple-image black-and-white printed in colors) that I might just as well have done it on Type C or dye transfer. Dye transfer would be the easiest, but much more expensive. But I was afraid of the permanence thing because I want to sell to museums and collectors. Then I got other opinions, like what if it doesn't last, paintings don't last, that sort of thing. So when I heard about gum-bichromate printing I decided that that would probably be a good one, that the image should be fairly stable because I would be using watercolor pigments and pigments being of different molecules from dyes, more stable, theoretically (like carbro was; that's a pigment process), so essentially the kind of image you get in gum-bichromate is similar to the carbro image, I would think, similar in chemical structure. Both take a fair amount of experience, gum-bichromate and carbro, fairly crafty-craft in that you can't just read it off in a book and then go do it, and of the two, of course, carbro is much more satisfactory in terms of rendering a full-color picture by the process of separation methods. What happens is that when you put down the first image you get a fairly smooth continuous tone. But as you build up that layer, those layers of gum-bichromate image on the paper, the contrast characteristic of the paper is going to change because the process depends on the roughness of the paper. It gets smoother and glossier as you lay the images on it and you're going to get an increase of contrast because of the way the paper takes up on a differentially hardened image. So that for artistic ef-

fect gum-bichromate is a nice process but it's not really a substitute for Type C or dye transfer in the way that you would render what we characteristically call a full-color photograph. I have one of the gum prints that I made for the Heliography shows, dated 1964, that's been continuously on my living room wall far from a window, not too far from table lamps, 100-watt table lamps, but that picture is fading distinctly. The yellows and the reds are beginning to fade.

"Carbon is very similar in composition to carbro. It's a gelatin mixture. The formula is described in Henney & Dudley's *Handbook of Photography* published by McGraw-Hill and now out of print but probably can be consulted at the public library. They have by far the best section on gum-bichromate printing."

A talk with Peter Bunnell

Deschin: The idea of print permanence in color is always in the backs of people's heads these days.

Bunnell: And for good reason too, I think.

D.: But things are improving, it seems.

B.: The problem is in the fugitive dyes.

D.: Cibachrome is coming in now with great promises of unprecedented longevity, like 30 years.

B.: Yes, but with accompanying problems in color rendition.

D.: Well, wouldn't that be like offering another medium? Now you have Cibachrome and dye transfer and other materials so you get to take your choice for different purposes, providing a variety of alternatives.

B.: Yes.

D.: So you work within the limits, as we always have done, of the individual materials, within the limits of what the selected medium has to offer. Is that reasonable?

B.: Yes, that's right.

D.: I'd like to talk to you on the subject of color print permanence (rather the absence of it in color materials) and the attitude of the galleries and museums with regard to the subject.

B.: Well, I think not so much only the museum situation, which I think is probably a little bit paranoid about preservation forever, but I think probably what's loosening up is the reality that you deal with what you have and you pay for what you get and if it all disappears in some time, well maybe that's what's going to happen, but you've been warned, and so why keep it off the market? Probably the most indicative thing about the contemporary situation in color is that in effect the photographers who have come into

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- 42—Sawyer's Slide Projectors 1975 catalog, a complete catalog of Sawyer's slide projectors, slide trays and accessories and projection lenses; also includes Pana-Vue slide viewers. GAF CORP.
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the medium outside of the traditional photographic bias, somewhat like Lucas Samaras, for instance, they don't give a damn about permanence or that sort of thing, and they just go ahead and do it, and if you want a Lucas Samaras then you pay the money and you get what you get, as long as it lasts. He doesn't give a damn, he doesn't guarantee it and he doesn't tell you not to buy it, so you do it, and so I think what's happening in part is that photographers who are interested in more contemporary expression find themselves in a freer position to deal with color than those who perhaps are more conservative in their expression as well as more traditionally rooted in the history of the medium.

D.: John Szarkowski (director of photography, The Museum of Modern Art) did say, well, we do show color, albeit not in great numbers; we show color slides (and he felt that color slides are an art form too), and so why not bring them in too.

B.: I think it is because there are a great many photographers whose work in the transparency form is much different from what it would be if converted to print.

D.: In the January, 1975 issue of *Artforum* Max Kozloff has an article on color which he illustrates with color photographs by at least two photographers of whom, Stephen Shore and Joel Markowitz, wouldn't have a picture if it were not for color, particularly Shore.

D.: That's a point; you wouldn't have this kind of expression in color if we didn't have the color medium. And you either take it as it is, or you don't.

B.: What you've got is basically the philosophy that the artist has the right to determine his own destiny, and it's not up to the museum to decide whether it is or not; in other words, they're going to go ahead and work and if you have it in your collection so much the better; if you don't, well that's too bad; they're going to go ahead anyway.

D.: Well, it could be that the museums would show these on these terms.

B.: That could be.

D.: O.K. so it doesn't last; we'll sweep that aspect under the rug. We won't talk about it.

B.: Well, showing and collecting are two different things, and I think that's what John's talking about, that they're showing and have shown a good many things, in color, but the question is, what do they put in the permanent collection? The key word is permanent, and there's no guarantee as to what's going to come out in the end and what isn't, but at the same

time, you have a public responsibility in a museum which is to provide material that people can see, but if it disappears will you simply state that; you can't ignore it. But I think that the spirit is different in the sense that the whole medium is being affected by the people who have not come to it out of the great long-term tradition and they couldn't care less what Stieglitz said or what Newhall says or me or anybody else. They're just going to do it and you're either going to get with them or you're going to miss the boat. And they know that. They just don't care about this any more; they do their work and that's that. They have ways now that will get them into the pantheon of what counts and of course the idea of whether the Museum of Modern Art deals with them is no longer quite as important as it was at one time. And I think that's having an influence very much. I think that Samaras has been almost a one-man influence that really just shocked everybody that here's a guy that just goes out and makes these Polaroids that everybody knows will disappear, and yet he charges \$1,500 for a print, and everybody can't imagine such a thing, and the problem is that he does it, and he's in the shows and nobody's brought up a suit yet that they bought one of these things and they disappeared. Then the question is whether they would really bring a suit against Samaras or bring a suit against Edwin Land. All of this talk about its fading or changing color is hearsay; I've never seen any data, really factual data, having to do with what degree of changes have occurred. All of this is kind of hypothesized. We've seen the old Printon, etc., in those godawful looking colors, but I've never seen any of this stuff and of course the interesting thing is to try and see whether any of this newer material, say for instance Ektacolor, the stuff that's printed on that resin-coated paper, whether that's any more potentially permanent than other things.

D.: I understand that the coating helps.

B.: The only side of it which might be mentioned, which always has been the case with a few of the photographers is the fact that they have not been in the position to do their own printing, and therefore they have felt that they could lose control and therefore that just didn't appeal to them and everybody wasn't prepared to set up a laboratory like Eliot Porter's and I know in a few cases that has been a very determining factor, that they can't control it down to the ultimate end; whether or not it fades or deteriorates is a secondary issue.

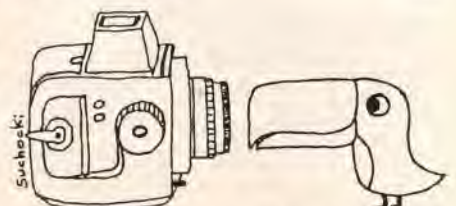
COMMUNICATOR
continued from page 39

project, but after waiting a year for a book contract that failed to materialize, Swedlund decided to publish the book himself. He had a student type the notes, then took the sheets to a printer. The latter's estimate was \$1,600, but the author made a deal; he advanced \$600 for paper stock and deferred payment for the printing. The book, *A Guide to Photography*, appeared the following year, at a time when colleges were clamoring for a suitable text. Sales totalled 40,000, handsomely profiting both author and printer.

To provide illustrations for the book, Swedlund issued a set of 30 slides of photographs. In the years that followed, he gathered additional pictures and amplified the text material. His 1966 mimeographed notes eventually evolved into *Photography: A Handbook of History, Materials, and Processes* (Holt Rinehart & Winston, 1974), a copiously illustrated 368-page tome that ranks as one of the best books on the subject. Sales of the paperback edition, which has been adopted as a text at many colleges, already exceed 35,000.

Much in demand as a lecturer, Swedlund has participated in workshops and seminars at the State University College at Geneseo, N.Y.; Refocus at the University of Iowa, Wesleyan University, Northern Kentucky State College, and the Center of the Eye at Aspen, Colo. At these and other gatherings of photography students and teachers, he brings the stimulus of his vision and remarkable versatility in creating and conveying images.

One of his workshops, "The Reconstruction of Color," deals with making natural color prints by means of a process based on the gum-bichromate technique, but using Kwik Proof pigments. The procedure, which utilizes black-and-white separation negatives, avoids many of the technical, invisible intricacies of conventional color processes. "Students can see it as it happens," he says. That's the key to the career of Charles Swedlund, who is interested in any technique, approach, or device that helps to make the art and science of photography more visible.



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STAN MALINOWSKI

Lady in the Lake—A test shooting for Playboy, at Malinowski's "poor man's Jamaica" near Michigan City, Indiana. With a Nikon F2 and 500mm f8 Reflex Nikkor lens, with a 50 Magenta filter. Exposure was 1/15th sec., on Kodachrome II with camera on tripod. Slight underexposure to achieve a semi-silhouette and keep sky dark.

Stan Malinowski, Chicago pro, has what many of us would call a dream photographic specialty: women. He has frequent assignments for top glamour magazines and has 10 Playboy covers to his credit. During his career he's also shot underwater, food, fashion, aerial and "just about everything there is to do." Stan is typical of today's young professionals: almost without exception they start with Nikon, and never, ever use anything else. He started with a Nikon SP rangefinder. It was a little different with the older pros, of course. Most of them discovered Nikon after starting with other brands. But, young or old, the story is the same now. The vast majority of today's and tomorrow's great photographers use Nikon. You can join the fraternity, at your Nikon dealer. Or write for Folio 10A, Nikon Inc., Garden City, N.Y. 11530  Subsidiary of Ehrenreich Photo-Optical Industries, Inc. (In Canada: Anglophoto Ltd., P.Q.)

